

**REPORT NUMBER: 208-MGA-2016-008**

**VEHICLE SAFETY COMPLIANCE TESTING  
FOR  
FMVSS 208, OCCUPANT CRASH PROTECTION  
FMVSS 212, WINDSHIELD MOUNTING  
FMVSS 219, WINDSHIELD INTRUSION (PARTIAL)  
FMVSS 301, FUEL SYSTEM INTEGRITY**

**BAYERISCHE MOTOREN WERKE AG  
2016 BMW 320i PASSENGER CAR  
NHTSA NO.: C20164101**

**PREPARED BY:  
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**TEST DATES: SEPTEMBER 9, 2016 – OCTOBER 3, 2016**

**FINAL REPORT DATE: MAY 4, 2017**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
ENFORCEMENT  
OFFICE OF VEHICLE SAFETY COMPLIANCE  
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<b>16. Abstract</b> Compliance tests were conducted on the subject 2016 BMW 320i in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-14. Test failures identified were as follows:  <b>TEST FAILURES:</b> Data Sheet 5, 2.7.9; [FMVSS 208 (S4.5.1(f)(2)(viii))] Information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system is not provided. BMW reported that future owner's manual would be updated to include this information.			
<b>17. Key Words</b>  Frontal Impact 40 kmph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219, (partial), "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"		<b>18. Distribution Statement</b> Copies of this report are available from the following: U.S. Department of Transportation National Highway Traffic Safety Administration Technical Information Services (TIS), Mail Code: NIO-120 1200 New Jersey Avenue, S.E. Washington, D.C. 20590 Phone: 202-366-2588	
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**SECTION 1**  
**PURPOSE OF COMPLIANCE TESTS**

This Federal Motor Vehicle Safety Standard 208 compliance test is part of a program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No.: DTNH22-13-D-00313. The purpose of this test was to determine whether the subject vehicle, a 2016 BMW 320i, NHTSA No.: C20164101, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity". The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No.: TP208-14 dated April 16, 2008.

## SECTION 2

### TESTS PERFORMED

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
 Test Dates: 9/9/16 – 10/3/16

The following checked items indicate the tests that were performed:

X	1.	Rear seating position seat belts
X	2.	Air bag labels (S4.5.1)
X	3.	Readiness indicator (S4.5.2)
X	4.	Passenger air bag manual cut-off device (S4.5.4)
X	5.	Lap belt lockability (S7.1.1.5)
X	6.	Seat belt warning system (S7.3)
X	7.	Seat belt contact force (S7.4.3)
X	8.	Seat belt latch plate access (S7.4.4)
X	9.	Seat belt retraction (S7.4.5)
X	10.	Seat belt guides and hardware (S7.4.6)
X	11.	Air bag suppression telltale (S19.2.2)
X	12.	Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R)
X	13.	Suppression tests with Newborn infant (Part 572, Subpart K)
	14.	Suppression tests with 3-year-old dummy (Part 572, Subpart P)
	15.	Suppression tests with 6-year-old dummy (Part 572, Subpart N)
X	16.	Test of Reactivation of the passenger air bag system with a representative unbelted 5 <sup>th</sup> percentile female
	17.	Low risk deployment test with 12-month-old dummy (Part 572, Subpart R)
X	18.	Low risk deployment test with 3-year-old dummy (Part 572, Subpart P)
X	19.	Low risk deployment test with 6-year-old dummy (Part 572, Subpart N)
X	20.	Low risk deployment test with 5 <sup>th</sup> female dummy (Part 572, Subpart O)
X	21.	Impact Tests
		Frontal Oblique
		Belted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
		Unbelted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
		Unbelted 50 <sup>th</sup> male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(1) or S5.1.2(b))
X		Frontal 0°
		Belted 50 <sup>th</sup> male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
		Belted 50 <sup>th</sup> male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
		Belted 5 <sup>th</sup> female dummy driver (0 to 48 kmph) (S16.1(a))
		Belted 5 <sup>th</sup> female dummy passenger (0 to 48 kmph) (S16.1(a))
		Belted 50 <sup>th</sup> male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
		Unbelted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))
		Unbelted 50 <sup>th</sup> male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
		Unbelted 50 <sup>th</sup> male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
		X Unbelted 5 <sup>th</sup> female dummy driver (32 to 40 kmph) (S16.1(b))
		X Unbelted 5 <sup>th</sup> female dummy passenger (32 to 40 kmph) (S16.1(b))
		40% Offset 0° Belted 5 <sup>th</sup> female dummy driver and passenger (0 to 40 kmph) (S18.1)
	22.	FMVSS 204 Indicant Test
X	23.	FMVSS 212 Test
X	24.	FMVSS 219 Indicant Test
X	25.	FMVSS 301 Frontal Test
	26.	FMVSS 305 Frontal Indicant Test

For the crash tests, the vehicle was instrumented with 8 accelerometers. The data from the vehicle and dummies were sampled at 10,000 samples per second and processed as specified in SAE J211/1 MAR95 and FMVSS 208, S4.13.

The dynamic tests were recorded using high-speed digital video.

The vehicle does not appear to meet all of the performance requirements to which it was tested. Data Sheet 5, 2.7.9; [FMVSS 208 (S4.5.1(f)(2)(viii))] Information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system is not provided. BMW reported that future owner's manual would be updated to include this information.

.

### SECTION 3

#### INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Date: 9/19/16 & 9/20/16

#### 3 Year-Old Low Risk Deployments

##### 3 Year-Old SN 031 Position 1 (Chest On Instrument Panel) 9/20/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	570	69
Peak Nij (Nte)	1.0	0.2
Time (ms)	NA	53.7
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	11.0
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	9.5
Peak Nij (Ncf)	1.0	0.3
Time (ms)	NA	15.4
Neck Tension	1130 N	261
Neck Compression	1380 N	356
Chest g	55 g	15
Chest Displacement	34 mm	9

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 100 ms

##### 3 Year-Old SN 031 Position 2 (Head On Instrument Panel) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	570	3
Peak Nij (Nte)	1.0	0.1
Time (ms)	NA	100.0
Peak Nij (Ntf)	1.0	0.0
Time (ms)	NA	11.3
Peak Nij (Nce)	1.0	0.4
Time (ms)	NA	23.3
Peak Nij (Ncf)	1.0	0.0
Time (ms)	NA	14.1
Neck Tension	1130 N	19
Neck Compression	1380 N	411
Chest g	55 g	4
Chest Displacement	34 mm	0

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 100 ms

### SECTION 3

#### INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Date: 9/20/16 & 9/21/16

#### 6 Year-Old Low Risk Deployments

##### 6 Year-Old SN 155 Position 1 (Chest On Instrument Panel) 9/21/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	67
Peak Nij (Nte)	1.0	0.3
Time (ms)	NA	80.4
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	21.9
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	9.5
Peak Nij (Ncf)	1.0	0.3
Time (ms)	NA	16.2
Neck Tension	1490 N	366
Neck Compression	1820 N	278
Chest g	60 g	11
Chest Displacement	40 mm	5

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 100 ms

##### 6 Year-Old SN 155 Position 2 (Head On Instrument Panel) 9/20/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	7
Peak Nij (Nte)	1.0	0.1
Time (ms)	NA	88.3
Peak Nij (Ntf)	1.0	0.0
Time (ms)	NA	0.9
Peak Nij (Nce)	1.0	0.4
Time (ms)	NA	25.0
Peak Nij (Ncf)	1.0	0.2
Time (ms)	NA	12.9
Neck Tension	1490 N	46
Neck Compression	1820 N	535
Chest g	60 g	4
Chest Displacement	40 mm	0

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 100 ms



### SECTION 3

#### INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Date: 9/19/16

#### 5<sup>th</sup> Percentile Female Low Risk Deployments

##### 5<sup>th</sup> Percentile Female SN 125 Position 1 (Chin On Module) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	14
Peak Nij (Nte)	1.0	0.4
Time (ms)	NA	67.8
Peak Nij (Ntf)	1.0	0.4
Time (ms)	NA	10.7
Peak Nij (Nce)	1.0	0.3
Time (ms)	NA	201.7
Peak Nij (Ncf)	1.0	0.1
Time (ms)	NA	251.2
Neck Tension	2070 N	1120
Neck Compression	2520 N	346
Chest g	60 g	12
Chest Displacement	52 mm	6
Left Femur	6805 N	131
Right Femur	6805 N	178

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 375 ms.

##### 5<sup>th</sup> Percentile Female SN 125 Position 2 (Chin On Rim) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	11
Peak Nij (Nte)	1.0	0.7
Time (ms)	NA	22.1
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	49.9
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	331.9
Peak Nij (Ncf)	1.0	0.2
Time (ms)	NA	52.4
Neck Tension	2070 N	1124
Neck Compression	2520 N	96
Chest g	60 g	18
Chest Displacement	52 mm	17
Left Femur	6805 N	16
Right Femur	6805 N	59

Second stage fire time of 250 ms; Injuries calculated on 0 ms to 375 ms.

### SECTION 3

#### INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
 Test Date: 10/3/16

#### 40 kmph Frontal Crash

Impact Angle:	0°			
Belted Dummies:		Yes	X	No

Speed Range:		0 to 40 kmph	X	32 to 40 kmph
		0 to 48 kmph		0 to 56 kmph

Test Speed (kmph):	39.4	Test Weight (kg):	1684.2
--------------------	------	-------------------	--------

Driver Dummy:	X	5 <sup>th</sup> female		50 <sup>th</sup> male
Passenger Dummy:	X	5 <sup>th</sup> female		50 <sup>th</sup> male

#### 5<sup>th</sup> Percentile Female Frontal Crash Test

Vehicles certified to S16.1 (a) (1), S16.1 (a) (2), S16.1 (b), or S18.1

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700	79	102
N <sub>te</sub>	1.0	0.4	0.2
N <sub>tf</sub>	1.0	0.1	0.4
N <sub>ce</sub>	1.0	0.3	0.2
N <sub>cf</sub>	1.0	0.1	0.7
Neck Tension	2620 N	1021	332
Neck Compression	2520 N	182	826
Chest g	60 g	33	40
Chest Displacement	52 mm	9	10
Left Femur	6805 N	2286	3255
Right Femur	6805 N	2806	2386

**SECTION 4**  
**DISCUSSION OF TESTS**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Dates: 9/9/16 – 10/3/16

Data Sheet 5, 2.7.9; [FMVSS 208 (S4.5.1(f)(2)(viii))] Information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system is not provided. BMW reported that future owner's manual would be updated to include this information.

A blanket and visor were not used in the suppression testing because they did not affect the sensing system used on the vehicle.

**SECTION 5**  
**TEST DATA SHEETS**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Dates: 9/9/16 – 10/3/16

**DATA SHEET 1**  
**COTR VEHICLE WORK ORDER**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Dates: 9/9/16 – 10/3/16

COTR Signature: 

Test to be performed for this vehicle are checked below:

<input checked="" type="checkbox"/>	1.	Rear Seating Position Seat Belts
<input checked="" type="checkbox"/>	2.	Air Bag Labels (S4.5.1)
<input checked="" type="checkbox"/>	3.	Readiness Indicator (S4.5.2)
<input checked="" type="checkbox"/>	4.	Passenger Air Bag Manual Cut-off Device (S4.5.4)
<input checked="" type="checkbox"/>	5.	Lap Belt Lockability (S7.1.1.5)
<input checked="" type="checkbox"/>	6.	Seat Belt Warning System (S7.3)
<input checked="" type="checkbox"/>	7.	Seat Belt Contact Force (S7.4.3)
<input checked="" type="checkbox"/>	8.	Seat Belt Latch Plate Access (S7.4.4)
<input checked="" type="checkbox"/>	9.	Seat Belt Retraction (S7.4.5)
<input checked="" type="checkbox"/>	10.	Seat Belt Guides and Hardware (S7.4.6)
<input checked="" type="checkbox"/>	11.	Air bag suppression telltale (S19.2.2)
<input checked="" type="checkbox"/>	12.	Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints (mid-height seat position):
Section B – Rear Facing (unbelted and belted rear facing, unbelted forward facing)		
<input type="checkbox"/>		Century Smart Fit 4543 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Cosco Arriva 22-013 <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input type="checkbox"/>		Evenflo Discovery Adjust Right 212 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input type="checkbox"/>		Graco Infant 8457 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Graco Snugride <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Peg Perego Viaggio <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
Section C – Convertible (unbelted and belted rear facing, unbelted and belted forward facing)		
<input checked="" type="checkbox"/>		Britax Roundabout E9L02 <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input type="checkbox"/>		Cosco High Back Booster 22-209 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Cosco Summit Deluxe 22-262 <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input type="checkbox"/>		Cosco Touriva 02519 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input type="checkbox"/>		Evenflo Generations 352 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input type="checkbox"/>		Evenflo Medallion 254 <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Evenflo Tribute V 379 <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input type="checkbox"/>		Graco ComfortSport <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input type="checkbox"/>		Graco Platinum Cargo <input type="checkbox"/> Full Rearward <input type="checkbox"/> Mid Position <input type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>		Graco Safeseat Step 2 <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward
<input checked="" type="checkbox"/>	13.	Suppression tests with newborn infant (Part 572, Subpart K) using the following indicated child restraints (mid-height seat position):
Section A – Car Bed (Belted)		
<input checked="" type="checkbox"/>		Angel Guard Angel Ride <input checked="" type="checkbox"/> Full Rearward <input checked="" type="checkbox"/> Mid Position <input checked="" type="checkbox"/> Full Forward

- ☐ 14. Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required (mid-height seat position):

Section C – Convertible (Belted forward-facing)

<input type="checkbox"/>	Britax Roundabout E9L02	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco High Back Booster 22-209	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco Summit Deluxe 22-262	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco Touriva 02519	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Generations 352	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Medallion 254	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Tribute V 379	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco ComfortSport	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco Platinum Cargo	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco Safeseat Step 2	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward

Section D – Toddler/Belt Positioning Booster (Belted)

<input type="checkbox"/>	Britax Roadster 9004	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco High Back Booster 22-209	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Generations 352	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Right Fit 245	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward

- ☐ 15. Suppression tests with representative 3-year-old child using the following indicated child restraints where a child restraint is required (mid-height position).

(Appendix H, Data Sheet 19H and 20H)

Section C – Convertible (Belted forward-facing)

<input type="checkbox"/>	Britax Roundabout E9L02	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco High Back Booster 22-209	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco Summit Deluxe 22-262	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco Touriva 02519	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Generations 352	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Medallion 254	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Tribute V 379	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco ComfortSport	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco Platinum Cargo	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Graco Safeseat Step 2	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward

Section D – Toddler/Belt Positioning Booster (Belted)

<input type="checkbox"/>	Britax Roadster 9004	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Cosco High Back Booster 22-209	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward
<input type="checkbox"/>	Evenflo Right Fit 245	<input type="checkbox"/>	Full Rearward	<input type="checkbox"/>	Mid Position	<input type="checkbox"/>	Full Forward

- ☐ 16. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following positions (mid-height seat position):
- |  |  |                                       |                                       |
|--|--|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Sitting on seat with back against seat back (S22.2.2.1)                     | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat with back against reclined seat back (S22.2.2.2)            | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat with back not against seat back (S22.2.2.3)                 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4) | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Standing on seat, facing forward (S22.2.2.5)                                | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Kneeling on seat facing forward (S22.2.2.6)                                 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Kneeling on seat facing rearward (S22.2.2.7)                                | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Lying on seat (S22.2.2.8)   | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
- ☐ 17. Suppression tests with representative 3-year-old child in the following positions (mid-height seat position):
- |  |  |                                       |                                       |
|--|--|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Sitting on seat with back against seat back (S22.2.2.1)                     | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat with back against reclined seat back (S22.2.2.2)            | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat with back not against seat back (S22.2.2.3)                 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4) | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Standing on seat, facing forward (S22.2.2.5)                                | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Kneeling on seat facing forward (S22.2.2.6)                                 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Kneeling on seat facing rearward (S22.2.2.7)                                | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Lying on seat (S22.2.2.8)   | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
- ☐ 18. Suppression tests with 6-year-old dummy (Part 572, Subpart N) using the following indicated child restraints where a child restraint is required (mid-height seat position):
- Section D
- |   |  |                                       |                                       |
|---|--|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Britax Roadster 9004           | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Cosco High Back Booster 22-209 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Cosco Summit Deluxe 22-262     | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Evenflo Generations 352        | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Evenflo Right Fit 245          | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Graco Platinum Cargo           | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |

- ☐ 19. Suppression tests with representative 6-year-old child using the following indicated child restraints where a child restraint is required (mid-height seat position):
- Section D
- |   |  |                                       |                                       |
|---|--|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Britax Roadster 9004           | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Cosco High Back Booster 22-209 | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Cosco Summit Deluxe 22-262     | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Evenflo Generations 352        | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Evenflo Right Fit 245          | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
| <input type="checkbox"/> Graco Platinum Cargo           | <input type="checkbox"/> Full Rearward | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |
- ☐ 20. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following positions (mid-height seat position):
- |   |                                       |                                       |  |
|---|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Sitting on seat with back against seat back (S22.2.2.1)                          |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting on seat with back against reclined seat back (S22.2.2.2)                 |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)      |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting back in the seat and leaning on the right front passenger door (S24.2.3) |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
- ☐ 21. Suppression tests with representative 6-year-old child in the following positions (mid-height seat position):
- |   |                                       |                                       |  |
|---|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Sitting on seat with back against seat back (S22.2.2.1)                          |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting on seat with back against reclined seat back (S22.2.2.2)                 |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)      |                                       |                                       |  |
| <input type="checkbox"/> Full Rearward  | <input type="checkbox"/> Mid Position | <input type="checkbox"/> Full Forward |  |
| <input type="checkbox"/> Sitting back in the seat and leaning on the right front passenger door (S24.2.3) |                                       |                                       |  |
- ☐ 22. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5<sup>th</sup> percentile female dummy (S20.3, 22.3, S24.3) (mid-height seat position). Perform this test after the following suppression tests: After each restraint.
- ☒ 23. Test of Reactivation of the Passenger Air Bag System with a representative 5<sup>th</sup> percentile female (S20.3, 22.3, S24.3) (mid-height seat position). Perform this test after the following suppression tests: After each restraint.
- ☐ 24. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints (full forward, mid-height seat position)(S20.4):
- Section B
- |   |
|---|
| <input type="checkbox"/> Century Smart Fit 4543             |
| <input type="checkbox"/> Cosco Arriva 22-013                |
| <input type="checkbox"/> Evenflo Discovery Adjust Right 212 |
| <input type="checkbox"/> Graco Infant 8457                  |
| <input type="checkbox"/> Graco Snuggly                      |
| <input type="checkbox"/> Peg Perego Viaggio                 |
- Section C
- |  |
|--|
| <input type="checkbox"/> Britax Roundabout E9L02 |
| <input type="checkbox"/> Cosco Touriva 02519     |
| <input type="checkbox"/> Evenflo Medallion 254   |
| <input type="checkbox"/> Evenflo Tribute V 379   |
| <input type="checkbox"/> Graco ComfortSport      |



- ☒ 25. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions:
- ☒ Position 1 (rearmost, lowest seat position)
  - ☒ Position 2 (mid-height seat position)
- ☒ 26. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions:
- ☒ Position 1 (rearmost, lowest seat position)
  - ☒ Position 2 (mid-height seat position)
- ☒ 27. Low risk deployment test with 5<sup>th</sup> female dummy (Part 572, Subpart O) in the following positions:
- ☒ Position 1 (mid-height seat position)
  - ☒ Position 2 (mid-height seat position)
- ☒ 28. Impact Tests
- |                                     | Frontal Oblique   | Impact Angle:   | Test Speed: |
|-------------------------------------|---|---|-------------|
| <input type="checkbox"/>            | <input type="checkbox"/>  | Belted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))                    |             |
|                                     | <input type="checkbox"/>  | Unbelted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))               |             |
|                                     | <input type="checkbox"/>  | Unbelted 50 <sup>th</sup> male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b)) |             |
| <input checked="" type="checkbox"/> | Frontal 0° - Test Speed: 39.4 kmph  |   |             |
|                                     | <input type="checkbox"/>  | Belted 50 <sup>th</sup> male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))                 |             |
|                                     | <input type="checkbox"/>  | Belted 50 <sup>th</sup> male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))              |             |
|                                     | <input type="checkbox"/>  | Belted 5 <sup>th</sup> female dummy driver (0 to 48 kmph) (S16.1(a)(1))                               |             |
|                                     | <input type="checkbox"/>  | Belted 5 <sup>th</sup> female dummy passenger (0 to 48 kmph) (S16.1(a)(1))                            |             |
|                                     | <input type="checkbox"/>  | Belted 5 <sup>th</sup> female dummy driver and passenger (0 to 56 kmph) (S16.1(a)(2))                 |             |
|                                     | <input type="checkbox"/>  | Belted 50 <sup>th</sup> male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))                |             |
|                                     | <input type="checkbox"/>  | Unbelted 50 <sup>th</sup> male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))              |             |
|                                     | <input type="checkbox"/>  | Unbelted 50 <sup>th</sup> male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))              |             |
|                                     | <input type="checkbox"/>  | Unbelted 50 <sup>th</sup> male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))           |             |
|                                     | <input checked="" type="checkbox"/>   | Unbelted 5 <sup>th</sup> female dummy driver (32 to 40 kmph) (S16.1(b))                               |             |
|                                     | <input checked="" type="checkbox"/>   | Unbelted 5 <sup>th</sup> female dummy passenger (32 to 40 kmph) (S16.1(b))                            |             |
| <input type="checkbox"/>            | 40% Offset 0° Belted 5 <sup>th</sup> female dummy driver and passenger (0 to 40 kmph) (S18.1) Test Speed: |   |             |
- ☐ 29. FMVSS 204 Indicant Test
- ☒ 30. FMVSS 212 Test
- ☒ 31. FMVSS 219 Indicant Test
- ☒ 32. FMVSS 301 Frontal Test
- ☐ 33. FMVSS 305 Frontal Indicant Test

**DATA SHEET 2**  
**REPORT OF VEHICLE CONDITION**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

NHTSA No.: C20164101  
Test Dates: 9/9/16 – 10/3/16

CONTRACT NO.: DTNH22-13-D-00313

Date: 10/10/2016

FROM (Lab and rep name): MGA Research Corporation

TO: NHTSA, OVSC, NVS-220

PURPOSE: ( ) Initial Receipt ( ) Received via Transfer (X) Present vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2016 / BMW 320i / Passenger Car

MANUFACTURE DATE: 09/15

NHTSA NO. C20164101

GVWR: 1994 kg (4396 lbs)

BODY COLOR: Alpine White

GAWR (Fr): 909 kg (2004 lbs)

VIN: WBA8A9C50GK617082

GAWR (Rr): 1145 kg (2524 lbs)

ODOMETER READINGS: ARRIVAL (miles): 17

DATE: 3/3/16

COMPLETION (miles): 21

DATE: 10/3/16

PURCHASE PRICE: (\$) 34,480.00

DEALER'S NAME: BMW of North America

498 Commerce Dr, Schaumburg, IL 60173

- A. All options listed on window sticker are present on the test vehicle:  
X Yes \_\_\_ No
- B. Tires and wheel rims are new and the same as listed: X Yes \_\_\_ No
- C. There are no dents or other interior or exterior flaws: X Yes \_\_\_ No
- D. The vehicle has been properly prepared and is in running condition:  
X Yes \_\_\_ No
- E. Keyless remote is available and working: X Yes \_\_\_ No
- F. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys: X Yes \_\_\_ No
- G. Proper fuel filler cap is supplied on the test vehicle: X Yes \_\_\_ No
- H. Using permanent marker, identify vehicle with NHTSA number and FMVSS test type(s) on roof line above driver door or for school buses, place a placard with NHTSA number inside the windshield and to the exterior front and rear side of bus:  
X Yes \_\_\_ No
- I. Place vehicle in storage area: X Yes \_\_\_ No
- J. Inspect the vehicle's interior and exterior, including all windows, seats, doors, etc. to confirm that each system is complete and functional per the manufacturer's specifications. Any damage, misadjustment, or other unusual condition that could influence the test program or test results shall be recorded. Report any abnormal condition to the NHTSA COTR before beginning any test:  
X Vehicle OK \_\_\_ Conditions reported below in comment section

Identify the letter above to which any of the following comments apply.

Comments: \_\_\_\_\_

**REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING**

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: FMVSS 208, 212, 219, 301

VEHICLE: 2016 BMW 320i

NHTSA NO.: C20164101

REMARKS:

Equipment that is no longer on the test vehicle as noted on previous page:

Right Tail Light, Tool Kit, Trunk Interior Trim

Explanation for equipment removal:

Components removed for instrumentation installation and to meet target weight.

Test Vehicle Condition:

25 mph frontal impact damage- front suspension & structure damaged, hood & front quarter panels damaged, radiator damaged, air bags & pretensioners deployed, Stoddard in fuel system

RECORDED BY: Jeff Lewandowski

DATE: 10/10/2016

APPROVED BY: David Winkelbauer

DATE: 10/10/2016

#####

**RELEASE OF TEST VEHICLE**

The vehicle described above is released from MGA to be delivered to:

Date:

Time:

Odometer:

Lab Rep's Signature:

Title:

Carrier/Customer Rep:

Date:

### DATA SHEET 3

#### CERTIFICATION LABEL AND TIRE PLACARD INFORMATION

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

NHTSA No.: C20164101  
 Test Date: 10/3/16

Certification Label (Part 567)	
Manufacturer:	BAYERISCHE MOTOREN WERKE AG
Date of Manufacture:	09/15
VIN:	WBA8A9C50GK617082
Vehicle Certified As (Pass. Car/MPV/Truck/Bus):	Passenger Car
Front Axle GVWR:	909 kg (2004 lbs)
Rear Axle GVWR:	1145 kg (2524 lbs)
Total GVWR:	1994 kg (4396 lbs)

Tire Placard for Motor Vehicles with GVWR of 10,000 lb or Less and Passenger Cars (571.110)	
Vehicle Capacity Weight:	408 kg (899 lbs)
Designated Seating Capacity Front:	2
Designated Seating Capacity Rear:	3
Total Designated Seating Capacity:	5
Recommended Cold Tire Inflation Pressure Front:	220 kpa (32 psi)
Recommended Cold Tire Inflation Pressure Rear:	220 kpa (32 psi)
Recommended Tire Size:	P225/50 R17
Tire Size on Vehicle:	P225/50 R17

Signature: 

Date: 10/3/16

**DATA SHEET 4**  
**REAR SEATING POSITION SEAT BELTS**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

	Yes	No
Do all rear seating positions have Type 2 seat belts?	X	

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a Type 2 seat belt was not installed.

REMARKS:

Signature: Edward B. Husak Date: 9/9/16

**DATA SHEET 5**  
**AIR BAG LABELS (S4.5.1)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

- ☒ 1. Air Bag Maintenance Label and Owner's Manual Instructions: (S4.5.1(a))
- ☒ 1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
- ☐ Yes (Go to 1.2)
- ☒ No (Go to 2)
- ☐ 1.2 Does the vehicle have a label specifying air bag maintenance or replacement?
- ☐ Yes – Pass
- ☐ No – Fail
- ☐ 1.3 Does the label contain one of the following?
- ☐ Yes – Pass
- ☐ No – Fail
- Check applicable schedule:
- ☐ Schedule on label specifies month and year (Record date\_\_\_\_\_)
- ☐ Schedule on label specifies vehicle mileage (Record mileage\_\_\_\_\_)
- ☐ Schedule on label specifies interval measured from date on certification label (Record interval\_\_\_\_\_)
- ☐ 1.4 Is the label permanently affixed within the passenger compartment such that it cannot be removed without destroying or defacing the label or vehicle part? (3/19/01 legal interpretation to Todd Mitchell)
- ☐ Yes – Pass
- ☐ No – Fail
- ☐ 1.5 Is the label lettered in English?
- ☐ Yes – Pass
- ☐ No – Fail
- ☐ 1.6 Is the label in block capitals and numerals?
- ☐ Yes – Pass
- ☐ No – Fail
- ☐ 1.7 Are the letters and numerals at least 3/32 inches high?
- ☐ Yes – Pass
- ☐ No – Fail
- ☐ 1.8 Does the owner's manual set forth the recommended schedule for maintenance or replacement?
- ☒ 2. Does the owner's manual: (S4.5.1(f))
- ☒ 2.1 Include a description of the vehicle's air bag system in an easily understandable format?
- ☒ Yes – Pass
- ☐ No – Fail
- ☒ 2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating position?
- ☒ Yes – Pass
- ☐ No – Fail
- ☒ 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating position?
- ☒ Yes – Pass
- ☐ No – Fail

- ☒ 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to ensure maximum safety protection for those occupants?  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S19, S21, S23, and S25? (Obtain answer to this question from the COTR) (S4.5.1(f)(2))  
☒ Yes – (Go to 2.7.1)  
☐ No – (Go to 3.)
- ☒ 2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.4 Explain how the components function together as part of the advanced passenger air bag system? (S4.5.1(f)(2)(ii))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2, or 23.2 (automatic suppression)?  
☒ Yes, continue with 2.7.6  
☐ No, go to 2.7.7
- ☒ 2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?  
☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))

☒ Yes – Pass  
☐ No – Fail

- ☒ 2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(vi))
- ☒ Yes – Pass  
☐ No – Fail
- ☒ 2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))
- ☐ Yes – Pass  
☒ No – Fail **See Test Notes Page 8**
- ☒ 3. Sun Visor Air Bag Warning Label (S4.5.1(b)): Vehicles certified to meet the requirements of S19, S21 and S23. (S4.5.1(b)(3))
- ☒ 3.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(3)) (3/19/01 legal interpretation to Todd Mitchell)
- ☒ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☒ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail
- ☒ 3.2 Does the label conform in content to the label shown in Figure 11 at each front outboard seating position? (S4.5.1(b)(2)) **(Vehicles without back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement: “Never put a rear-facing child seat in the front.” (S4.5.1(b)(3)(v)))**



Figure 11. Sun Visor Label Visible when Visor is in Down Position.



Figure 6b. Sun Visor Label Visible When Visor is in Down Position.



- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.3 Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(b)(3)(i))

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.4 Is the message area white with black text? (S4.5.1(b)(3)(ii))

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.5 Is the message area at least 30 cm<sup>2</sup>? (S4.5.1(b)(3)(ii))

**The message area consists of the total label area minus the yellow heading area and the pictogram. The pictogram is enclosed on the left side and bottom by the edge of the label. The top edge of the pictogram area is defined by a horizontal line midway between the uppermost edge of the pictogram and the lowermost edge of the text. The right side of the pictogram is defined by a vertical line midway between the rightmost edge of the pictogram and the left most edge of the text, including any bullets. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)**

Driver Side: Length 72 mm, Width 47 mm

Passenger Side: Length 72 mm, Width 47 mm

Driver actual message area 33.8 cm<sup>2</sup>

Passenger actual message area 33.8 cm<sup>2</sup>

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.6 Is the pictogram black on a white background? (S4.5.1(b)(3)(iii))

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.7 Is the pictogram at least 30 mm in length? (S4.5.1(b)(3)(iii))

Driver side: Length: 39 mm

Passenger side: Length: 39 mm

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.8 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (S4.5.1(b)(5)(i))

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☒ 3.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warning label? (S4.5.1(b)(5)(ii))

- ☒ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☒ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

- ☒ 3.10 Does the driver side visor contain a rollover-warning label on the same side of the visor as the air bag warning label?
- \_\_\_ Yes (go to 3.10.1)
- ☒ No (go to 4., skipping 3.10.1 through 3.10.3)
- ☐ 3.10.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?
- \_\_\_ Yes (go to 3.10.2 and skip 3.10.3)
- \_\_\_ No (go to 3.10.3 and skip 3.10.2)
- ☐ 3.10.2 Is the shortest distance from the border of the rollover label to the border of the air bag warning label at least 1 cm? (575.105 (d)(1)(iv)(B))
- \_\_\_\_\_ actual distance
- \_\_\_ Yes-Pass \_\_\_ **No-FAIL**
- ☐ 3.10.3 Is the shortest distance from any of the lettering or graphics on the rollover-warning label to any of the lettering or graphics of the air bag warning label at least 3 cm? (575.105 (d)(1)(iv)(A))
- \_\_\_\_\_ actual distance
- \_\_\_ Yes-Pass \_\_\_ **No-FAIL**
- ☒ 4. Air Bag Alert Label (S4.5.1(c) (A “Rollover Warning Label” or “Rollover Alert Label” may be on the same side of the driver’s sun visor as the “Air Bag Alert Label.” 575.105(d))
- ☒ 4.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?
- ☒ **If yes for driver and passenger, go to 5.**
- ☒ Driver Side, Yes
- ☐ Driver Side, No
- ☒ Passenger Side, Yes
- ☐ Passenger Side, No
- ☐ 4.2 Is the air bag alert label permanently affixed (including permanent marking on the visor material or molding into the visor material) to the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(c)) (3/19/01 legal interpretation to Todd Mitchell)
- ☐ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☐ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail
- ☐ 4.3 Is the air bag alert label visible when the visor is in the stowed position? (S4.5.1(c))
- ☐ Driver Side, Yes – Pass
- ☐ Driver Side, No – Fail
- ☐ Passenger Side, Yes – Pass
- ☐ Passenger Side, No – Fail

☐ 4.4 Does the label conform in content to the label shown in Figure 6C? (S4.5.1(c))

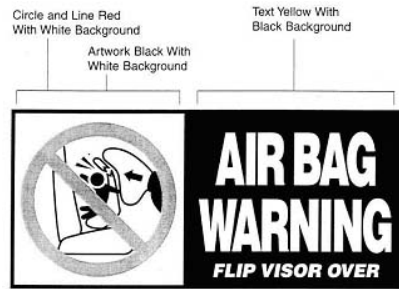


Figure 6c. Sun Visor Label Visible When Visor is in Up Position.

- ☐ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☐ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail

☐ 4.5 Is the message area black with yellow text? (S4.5.1(c)(1))

- ☐ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☐ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail

☐ 4.6 Is the message area at least 20 cm<sup>2</sup>? (S4.5.1(c)(1)) **The message area consists of the black part of the label.**

Driver Side: Length \_\_\_\_\_, Width \_\_\_\_\_  
 Passenger Side: Length \_\_\_\_\_, Width \_\_\_\_\_  
 Actual message area \_\_\_\_\_ cm<sup>2</sup>

- ☐ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☐ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail

☐ 4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))

- ☐ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☐ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail

☐ 4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))

Driver Side: Diameter \_\_\_\_\_ mm  
 Passenger Side: Diameter \_\_\_\_\_ mm

- ☐ Driver Side, Yes – Pass  
☐ Driver Side, No – Fail  
☐ Passenger Side, Yes – Pass  
☐ Passenger Side, No – Fail

☒ 5. Label on the Dashboard: Vehicles certified to meet the requirements of S19, S21 and S23?

☒ 5.1 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e)(3))

☒ Yes – Pass

☐ No – Fail

☒ 5.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(3))

☒ Yes – Pass  
☐ No – Fail

- ☒ 5.3 Does the label conform in content to the label shown in Figure 12? (S4.5.1(e)(3)) **Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” Vehicles without back seats or too small to accommodate a rear-facing child restraint consistent with S4.5.4.1 as determined in DATA SHEET 7 may omit the statement “Never put a rear-facing child seat in the front.” (S4.5.1(e)(3)(iii))**

☒ Yes – Pass  
☐ No - Fail

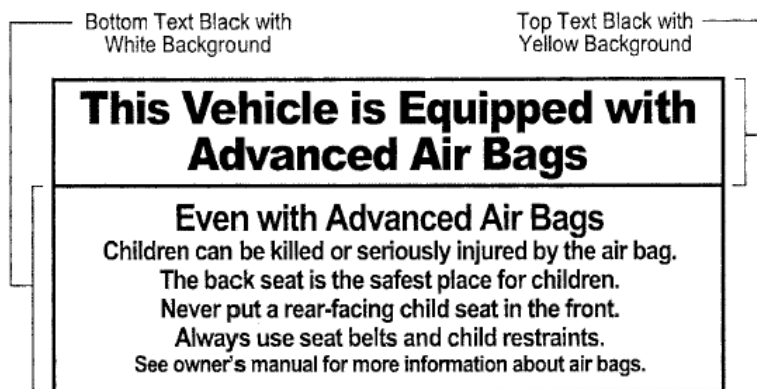


Figure 12. Removable Label on Dash.

- ☒ 5.4 Is the heading area yellow with black text? (S4.5.1(e)(3)(i))

☒ Yes – Pass  
☐ No - Fail

- ☒ 5.5 Is the message white with black text? (S4.5.1(e)(3)(ii))

☒ Yes – Pass  
☐ No - Fail

- ☒ 5.6 Is the message area at least 30 cm<sup>2</sup>? (S4.5.1(e)(3)(ii)) **The message area consists of the total label area minus the yellow heading area. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)**

Length 105 mm, Width 32 mm

Actual message area 33.6 cm<sup>2</sup>

☒ Yes – Pass  
☐ No - Fail

I certify that I have read and performed each instruction.

Signature: Edward B. Musak

Date: 9/9/16

**DATA SHEET 6**  
**FMVSS 208 READINESS INDICATOR (S4.5.2)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation to Lawrence F. Hennegerger on behalf of Breed)

- ☒ 1. Is the system totally mechanical? **(If Yes, this Data Sheet is complete).**  
☐ Yes  
☒ No
- ☒ 2. Describe the location of the readiness indicator: *Bottom Left of Instrument Cluster*
- ☒ 3. Is the readiness indicator clearly visible to the driver?  
☒ Yes – Pass  
☐ No - Fail
- ☒ 4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided on a label or in the owner's manual?  
☒ Yes – Pass  
☐ No - Fail
- ☒ 5. Does the vehicle have an on-off switch for the passenger air bag?  
☐ If Yes (go to 6)  
☒ If No (this form is complete)
- ☐ 6. Is the air bag readiness indicator off when the passenger air bag switch is in the off position?  
☐ Yes – Pass  
☐ No - Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward E. Husak Date: 9/9/16

## DATA SHEET 7

### PASSENGER AIR BAG MANUAL CUT-OFF DEVICE (S4.5.4)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

- ☒ 1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?  
☐ Yes, go to 2  
☒ No, this sheet is complete
- ☐ 2. Does the vehicle have any forward-facing rear designated seating positions? (S4.5.4.1(a))  
☐ Yes, go to 3  
☐ No, go to 4
- ☐ 3. Verification there is room for a child restraint in the rear seat behind the driver's seat. (S4.5.4.1(b))
- ☐ 3.1 Using all the controls that affect the fore-aft movement of the seat, move the seat to the rearmost position. Mark this position.  
☐ N/A – the seat does not have fore-aft adjustment
- ☐ 3.2 Using all the controls that affect the fore-aft movement of the seat, move the seat to the foremost position. Mark this position.  
☐ N/A – the seat does not have fore-aft adjustment
- ☐ 3.3 Move the seat to the middle of the foremost and rearmost positions. (S8.1.2)  
☐ N/A – the seat does not have a fore-aft adjustment
- ☐ 3.4 If the driver's seat height is adjustable, use all the controls that affect height to put it in the lowest position while maintaining the middle fore-aft position. (S8.1.2)  
☐ N/A – No seat height adjustment
- ☐ 3.5 Position the driver's seat adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)  
☐ N/A – No lumbar adjustment
- ☐ 3.6 The driver's seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1(b) and S8.1.3)  
☐ N/A – No seat back angle adjustment  
☐ Manufacturer's design driver's seat back angle \_\_\_\_\_  
☐ Tested driver's seat back angle \_\_\_\_\_
- ☐ 3.7 Is the driver seat a bucket seat?  
 \_\_\_ Yes, go to 3.7.1 and skip 3.7.2.  
 \_\_\_ No, go to 3.7.2 and skip 3.7.1.
- ☐ 3.7.1 Bucket seats:
- ☐ 3.7.1.1 Locate and mark a vertical Plane B through the longitudinal centerline of the driver's seat cushion. The longitudinal centerline of a bucket seat cushion is determined at SgRP. (S16.3.1.10) (S4.5.4.1(b)(1))
- ☐ 3.7.1.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion behind the driver's seat. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the driver's seat.  
 \_\_\_\_\_ mm distance  
 \_\_\_\_\_ less than 720 mm – Pass  
 \_\_\_\_\_ more than 720 mm – **FAIL**  
 Go to 4
- ☐ 3.7.2 Bench seats (including split bench seats):
- ☐ 3.7.2.1 Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline. (S4.5.4.1(b)(2))

- ☐ 3.7.2.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the front seat.  
       \_\_\_\_\_ mm distance  
       \_\_\_\_\_ less than 720 mm – Pass  
       \_\_\_\_\_ more than 720 mm - **FAIL**  
       Go to 4
- ☐ 4. Does the device turn the air bag on and off using the vehicle's ignition key? (S4.5.4.2)  
       ☐ Yes – Pass  
       ☐ No – Fail
- ☐ 5. Is the on-off device separate from the ignition switch? (S4.5.4.2)  
       ☐ Yes – Pass  
       ☐ No – Fail
- ☐ 6. Is there a telltale light that comes on when the passenger air bag is turned off? (S4.5.4.2)  
       ☐ Yes – Pass  
       ☐ No – Fail
- ☐ 7. Telltale light (S4.5.4.3)
- ☐ 7.1 Is the light yellow? (S4.5.4.3(a))  
       ☐ Yes – Pass  
       ☐ No – Fail
- ☐ 7.2 Are the words "PASSENGER AIR BAG OFF" or "PASS AIR BAG OFF" (S4.5.4.3(b))  
       ☐ 7.2.1 on the telltale?  
               ☐ Yes – Pass, go to 7.3  
               ☐ No – go to 7.2.2
- ☐ 7.2.2 within 25 mm of the telltale?  
       ☐ Measurement from the edge of the telltale light (mm):  
               ☐ Yes – Pass  
               ☐ No – Fail
- ☐ 7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3c)  
       (Leave the air bag off for 5 minutes.)  
       ☐ Yes – Pass  
       ☐ No – Fail
- ☐ 7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))  
       ☐ Yes – Fail  
       ☐ No – Pass
- ☐ 7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.4.3(e))  
       ☐ Yes – Fail  
       ☐ No – Pass
- ☐ 8. Owner's Manual
- ☐ 8.1 Does the owner's manual contain complete instructions on the operation of the on-off switch? (S4.5.4.4(a))  
       ☐ Yes – Pass  
       ☐ No – Fail

- ☐ 8.2 Does the owner's manual contain a statement that the on-off switch should only be used when a member of one of the following risk groups is occupying the right front passenger seating position? (S4.5.4.4(b))
- Infants: there is no back seat  
the rear seat is too small to accommodate a child restraint  
there is a medical condition that must be monitored constantly
- Children aged 1 to 12: there is no back seat  
space is not always available in the rear seat  
there is a medical condition that must be monitored constantly
- Medical condition: medical risk causes special risk for passenger  
greater risk for harm than with the air bag on
- ☐ Yes – Pass  
☐ No – Fail
- ☐ 8.3 Does the owner's manual contain a warning about the safety consequences of using the on-off switch at other times?
- ☐ Yes – Pass  
☐ No – Fail

REMARKS:

Signature: Edward B. Musak Date: 9/9/16

I certify that I have read and performed each instruction.



## DATA SHEET 8

### LAP BELT LOCKABILITY

**Passenger cars, trucks, buses, and multipurpose passenger  
Vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

Complete one of these forms for **each** designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION:	Front Passenger
------------------------------	-----------------

- |   |  |
|---|--|
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div>                      | N/A – No retractor is at this position   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div>                      | N/A – The retractor is an automatic locking retractor ONLY   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 1. Record test fore-aft seat position: <b>REAR</b><br>(S7.1.1.5(c)(1)) (Any position is acceptable)  |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))        |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 4. Place any adjustable seat belt anchorage in the lowest adjustment position.   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> N/A The anchorage is not adjustable.   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 5. Buckle the seat belt. (S7.1.1.5(c)(1))  |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))  |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))  |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?  |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes (go to 8.1)  |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div> No (go to 9)  |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 8.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 20px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1)) |

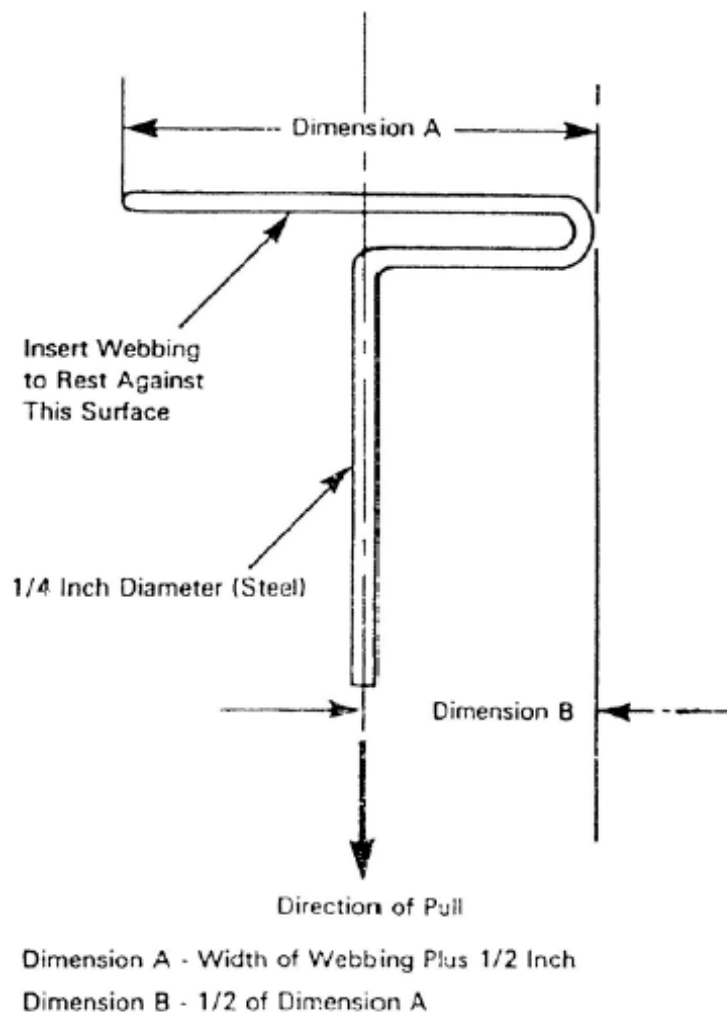
- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ Measured distance between A and B (inches): 55 ¼
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at ½ the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- ☒ Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- ☒ Measured distance between A and B: 25 ½ inches
- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 26 ½ inches (S7.1.1.5(c)(6))
- ☒ 15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled.
- ☒ 16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- Measured distance between A and B: 10 ½ inches
- ☒ 18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 10 ¾ inches (S7.1.1.5(c)(6))
- ☒ 19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
- ☒  $14 - 13 = 26 \frac{1}{2} - 25 \frac{1}{2} = 1$  inch;
- ☒  $18 - 17 = 10 \frac{3}{4} - 10 \frac{1}{2} = \frac{1}{4}$  inch
- ☒ Yes – Pass
- ☐ No – Fail

- ☒ 20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both?  
(S7.1.1.5(c)(8))
- ☒  $10-14 = 55 \frac{1}{4} - 26 \frac{1}{2} = 28 \frac{3}{4}$  inches;
- ☒  $10-18 = 55 \frac{1}{4} - 10 \frac{3}{4} = 44 \frac{1}{2}$  inches;
- ☒ Yes – Pass
- ☐ No – Fail

REMARKS:

Signature: Edward B. Musak Date: 9/9/16

I certify that I have read and performed each instruction.



**Figure 5. - Webbing Tension Pull Device**

## DATA SHEET 8

### LAP BELT LOCKABILITY

**Passenger cars, trucks, buses, and multipurpose passenger  
Vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

Complete one of these forms for **each** designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION:	Left Rear Passenger
------------------------------	---------------------

- |   |  |
|---|--|
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div>                      | N/A – No retractor is at this position   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div>                      | N/A – The retractor is an automatic locking retractor ONLY   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 1. Record test fore-aft seat position: <b>FIXED</b><br>(S7.1.1.5(c)(1)) (Any position is acceptable)   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))        |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 4. Place any adjustable seat belt anchorage in the lowest adjustment position.   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> N/A The anchorage is not adjustable.   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 5. Buckle the seat belt. (S7.1.1.5(c)(1))  |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))  |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))  |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?  |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes (go to 8.1)  |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div> No (go to 9)  |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 8.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> Yes – Pass   |
|   | <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto;"></div> No – Fail   |
| <div style="background-color: yellow; width: 30px; height: 20px; margin: 0 auto; text-align: center;">X</div> | 9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1)) |

- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ Measured distance between A and B (inches): 63
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at  $\frac{1}{2}$  the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- ☒ Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- ☒ Measured distance between A and B: 35 inches
- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 36 inches (S7.1.1.5(c)(6))
- ☒ 15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled.
- ☒ 16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- Measured distance between A and B: 12  $\frac{3}{4}$  inches
- ☒ 18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 13 inches (S7.1.1.5(c)(6))
- ☒ 19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
- ☒  $14 - 13 = 36 - 35 = 1$  inch;
- ☒  $18 - 17 = 13 - 12 \frac{3}{4} = \frac{1}{4}$  inch
- ☒ Yes – Pass
- ☐ No – Fail

- ☒ 20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both?  
(S7.1.1.5(c)(8))
- ☒ 10-14 = 63 - 36 = 27 inches;
- ☒ 10-18 = 63 - 13 = 50 inches
- ☒ Yes – Pass
- ☐ No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Musak Date: 9/9/16

## DATA SHEET 8

### LAP BELT LOCKABILITY

**Passenger cars, trucks, buses, and multipurpose passenger  
Vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

Complete one of these forms for **each** designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION:	Center Rear Passenger
------------------------------	-----------------------

- |                                     |     |   |
|-------------------------------------|-----|---|
| <input type="checkbox"/>            |     | N/A – No retractor is at this position  |
| <input type="checkbox"/>            |     | N/A – The retractor is an automatic locking retractor ONLY  |
| <input checked="" type="checkbox"/> | 1.  | Record test fore-aft seat position: <b>FIXED</b><br>(S7.1.1.5(c)(1)) (Any position is acceptable)   |
| <input checked="" type="checkbox"/> | 2.  | Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))        |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 3.  | Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))   |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 4.  | Place any adjustable seat belt anchorage in the lowest adjustment position.   |
|                                     |     | <input checked="" type="checkbox"/> N/A The anchorage is not adjustable.  |
| <input checked="" type="checkbox"/> | 5.  | Buckle the seat belt. (S7.1.1.5(c)(1))  |
| <input checked="" type="checkbox"/> | 6.  | Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))  |
| <input checked="" type="checkbox"/> | 7.  | Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))  |
| <input checked="" type="checkbox"/> | 8.  | Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?  |
|                                     |     | <input checked="" type="checkbox"/> Yes (go to 8.1)   |
|                                     |     | <input type="checkbox"/> No (go to 9)   |
| <input checked="" type="checkbox"/> | 8.1 | Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))    |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 9.  | Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1)) |



- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ Measured distance between A and B (inches): 61 ½
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at ½ the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- ☒ Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- ☒ Measured distance between A and B: 29 ¾ inches
- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 30 inches (S7.1.1.5(c)(6))
- ☒ 15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled.
- ☒ 16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- Measured distance between A and B: 14 ¾ inches
- ☒ 18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 15 ¼ inches (S7.1.1.5(c)(6))
- ☒ 19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
- ☒  $14 - 13 = 30 - 29 \frac{3}{4} = \frac{1}{4}$  inch;
- ☒  $18 - 17 = 15 \frac{1}{4} - 14 \frac{3}{4} = \frac{1}{2}$  inch
- ☒ Yes – Pass
- ☐ No – Fail



- ☒ 20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both?  
(S7.1.1.5(c)(8))
- ☒ 10-14 =  $61 \frac{1}{2} - 30 = 30 \frac{1}{2}$  inches;
- ☒ 10-18 =  $61 \frac{1}{2} - 15 \frac{1}{4} = 46 \frac{1}{4}$  inches
- ☒ Yes – Pass
- ☐ No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Musak Date: 9/9/16

## DATA SHEET 8

### LAP BELT LOCKABILITY

**Passenger cars, trucks, buses, and multipurpose passenger  
Vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/9/16

Complete one of these forms for **each** designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION:	Right Rear Passenger
------------------------------	----------------------

- |                                     |     |   |
|-------------------------------------|-----|---|
| <input type="checkbox"/>            |     | N/A – No retractor is at this position  |
| <input type="checkbox"/>            |     | N/A – The retractor is an automatic locking retractor ONLY  |
| <input checked="" type="checkbox"/> | 1.  | Record test fore-aft seat position: <b>FIXED</b><br>(S7.1.1.5(c)(1)) (Any position is acceptable)   |
| <input checked="" type="checkbox"/> | 2.  | Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))        |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 3.  | Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <b>NOT</b> require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))   |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 4.  | Place any adjustable seat belt anchorage in the lowest adjustment position.   |
|                                     |     | <input checked="" type="checkbox"/> N/A The anchorage is not adjustable.  |
| <input checked="" type="checkbox"/> | 5.  | Buckle the seat belt. (S7.1.1.5(c)(1))  |
| <input checked="" type="checkbox"/> | 6.  | Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))  |
| <input checked="" type="checkbox"/> | 7.  | Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))  |
| <input checked="" type="checkbox"/> | 8.  | Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?  |
|                                     |     | <input checked="" type="checkbox"/> Yes (go to 8.1)   |
|                                     |     | <input type="checkbox"/> No (go to 9)   |
| <input checked="" type="checkbox"/> | 8.1 | Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))    |
|                                     |     | <input checked="" type="checkbox"/> Yes – Pass  |
|                                     |     | <input type="checkbox"/> No – Fail  |
| <input checked="" type="checkbox"/> | 9.  | Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1)) |

- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ Measured distance between A and B (inches): 62
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at  $\frac{1}{2}$  the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- ☒ Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- ☒ Measured distance between A and B: 30 inches
- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 30  $\frac{1}{2}$  inches (S7.1.1.5(c)(6))
- ☒ 15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled.
- ☒ 16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
- Measured force application angle: 10° (spec. 5 - 15 degrees)
- ☒ 17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
- Measured distance between A and B: 17 inches
- ☒ 18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
- Record onset rate: 15 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
- Measured distance between A and B: 17  $\frac{1}{4}$  inches (S7.1.1.5(c)(6))
- ☒ 19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
- ☒  $14 - 13 = 30 \frac{1}{2} - 30 = \frac{1}{2}$  inch;
- ☒  $18 - 17 = 17 \frac{1}{4} - 17 = \frac{1}{4}$  inch
- ☒ Yes – Pass
- ☐ No – Fail

- ☒ 20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both?  
(S7.1.1.5(c)(8))
- ☒ 10-14 =  $62 - 30 \frac{1}{2} = 31 \frac{1}{2}$  inches;
- ☒ 10-18 =  $62 - 17 \frac{1}{4} = 44 \frac{3}{4}$  inches
- ☒ Yes – Pass
- ☐ No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Musak Date: 9/9/16

## DATA SHEET 9

### FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak


NHTSA No.: C20164101  
 Test Date: 9/9/16

- |                                     |     |   |
|-------------------------------------|-----|---|
| <input checked="" type="checkbox"/> | 1.  | The occupant is in the driver's seat.   |
| <input checked="" type="checkbox"/> | 2.  | The seat belt is in the stowed position.  |
| <input checked="" type="checkbox"/> | 3.  | The key is in the "on" or "start" position.   |
| <input checked="" type="checkbox"/> | 4.  | The time duration of the audible signal beginning with key "on" or "start" is <u>6</u> seconds.       |
| <input checked="" type="checkbox"/> | 5.  | The occupant is in the driver's seat.   |
| <input checked="" type="checkbox"/> | 6.  | The seat belt is in the stowed position.  |
| <input checked="" type="checkbox"/> | 7.  | The key is in the "on" or "start" position.   |
| <input checked="" type="checkbox"/> | 8.  | The time duration of the warning light beginning with key "on" or "start" is <u>Stays On</u> seconds. |
| <input checked="" type="checkbox"/> | 9.  | The occupant is in the driver's seat.   |
| <input checked="" type="checkbox"/> | 10. | The seat belt is in the latched position and with at least 4 inches of belt webbing extended.         |
| <input checked="" type="checkbox"/> | 11. | The key is in the "on" or "start" position.   |
| <input checked="" type="checkbox"/> | 12. | The time duration of the warning light beginning with key "on" or "start" is <u>0</u> seconds.        |
| <input checked="" type="checkbox"/> | 13. | Complete the following table with the data from 4, 8, and 12 to determine which option is used.       |

		Warning light	Warning light specification	Audible signal	Audible signal specification*
S7.3 (a)(1)	Belt stowed & key on or start	Item 8: <u>Stays On</u>	60 seconds minimum	Item 4: <u>6</u>	4 to 8 seconds
S7.3 (a)(2)	Belt latched & key on or start	Item 12: <u>0</u>	4 to 8 seconds		
	Belt stowed & key on or start	Item 8: <u>Stays On</u>	4 to 8 seconds	Item 4: <u>6</u>	4 to 8 seconds

\* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds.

A voluntary audible signal after the 4 to 8 second required signal may be provided. It must be differentiated from the required signal (5/25/2001 legal interpretation to Longacre and Associates).

- |                                     |     |  |
|-------------------------------------|-----|--|
| <input checked="" type="checkbox"/> | 14. | The seat belt warning system meets the requirements of (manufacturers may comply with either section). |
| <input checked="" type="checkbox"/> |     | S7.3 (a)(1)  |
| <input checked="" type="checkbox"/> |     | S7.3 (a)(2)  |
| <input checked="" type="checkbox"/> |     | FAIL – Does NOT meet the requirements of either option.  |
| <input checked="" type="checkbox"/> | 15. | Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))  |
| <input checked="" type="checkbox"/> |     | Fasten Seat Belts  |
| <input checked="" type="checkbox"/> |     | Fasten Belts   |
| <input checked="" type="checkbox"/> |     | Symbol 101 -        |
| <input checked="" type="checkbox"/> |     | FAIL – Does not use any of the above wording or symbol.  |

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Husak Date: 9/9/16

# DATA SHEET 10

## BELT CONTACT FORCE (\$7.4.3)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION:	Left Rear Passenger
------------------------------	---------------------

- |   |     |  |
|---|-----|--|
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div></div> | 1.  | Does the vehicle incorporate a webbing tension-relieving device?<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>Yes (this form is complete)</div> </div> <div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div> No (continue with this check sheet)</div> </div>  |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div></div> | 2.  | Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div> N/A – No lumbar adjustment</div> </div>   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div></div> | 3.  | Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div> N/A – No additional support adjustment</div> </div>   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div></div> | 4.  | Is the fore-aft position of the seat adjustable?<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div> No – go to 5</div> </div> <div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>Yes – go to 4.1</div> </div>   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 4.1 | Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. <b>Mark</b> this position. (8/31/95 legal interpretation to Hogan and Hartson)  |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 4.2 | Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. <b>Mark</b> this position. (8/31/95 legal interpretation to Hogan and Hartson)   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 4.3 | <b>Mark</b> each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, <b>mark</b> each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interpretation to Hogan and Hartson)  |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 4.4 | Move the seat to the mid position.   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 4.5 | While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div></div> | 5.  | Is the seat back angle adjustable?<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div><div style="background-color: black; color: white; font-weight: bold; margin: 0 5px;">X</div> No- go to 6</div> </div> <div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>Yes- go to 5.1</div> </div>   |
| <div style="background-color: yellow; border: 1px solid black; width: 30px; height: 20px; display: flex; align-items: center; justify-content: center;"></div>  | 5.1 | Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a 50 <sup>th</sup> percentile adult male in the manner specified by the manufacturer.<br><div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>N/A – No seat back angle adjustment</div> </div> <div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>Manufacturer's design seat back angle: _____</div> </div> <div style="display: flex; margin-top: 5px;"> <div style="width: 20px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div>Tested seat back angle: _____</div> </div> |

- ☒ 6. Is the seat a bucket seat?  
☐ Yes, go to 6.1 and skip 6.2  
☒ No, go to 6.2 and skip 6.1
- ☐ 6.1 Bucket seats:  
 Locate and mark the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ☒ 6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
- ☐ 6.2.1 Driver Seat  
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- ☐ 6.2.2 Front Outboard Passenger Seat  
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)  
☐ Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_  
☐ Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. \_\_\_\_\_
- ☒ 6.2.3 Rear designated seating positions  
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline.
- ☒ 7. Position the test dummies according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ☒ 8. Fasten the seat belt latch.
- ☒ 9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
- ☒ 10. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
- ☒ Contact Force (lb): **0.6**  
☒ 0.0 to 0.7 pounds – Pass  
☐ Greater than 0.7 pounds - FAIL

REMARKS:

Signature: Edward B. Musak

Date: 9/9/16

I certify that I have read and performed each instruction.

# DATA SHEET 10

## BELT CONTACT FORCE (\$7.4.3)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION:	Center Rear Passenger
------------------------------	-----------------------

- X

1. Does the vehicle incorporate a webbing tension-relieving device?

Yes (this form is complete)  

X

 No (continue with this check sheet)
- X

2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)

X

 N/A – No lumbar adjustment
- X

3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)

X

 N/A – No additional support adjustment
- X

4. Is the fore-aft position of the seat adjustable?

X

 No – go to 5  
 Yes – go to 4.1
- 4.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interpretation to Hogan and Hartson)
- 4.2 Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interpretation to Hogan and Hartson)
- 4.3 **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interpretation to Hogan and Hartson)
- 4.4 Move the seat to the mid position.
- 4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- X

5. Is the seat back angle adjustable?

X

 No- go to 6  
 Yes- go to 5.1
- 5.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a 50<sup>th</sup> percentile adult male in the manner specified by the manufacturer.

N/A – No seat back angle adjustment  
 Manufacturer's design seat back angle: \_\_\_\_\_  
 Tested seat back angle: \_\_\_\_\_



- ☒ 6. Is the seat a bucket seat?  
☐ Yes, go to 6.1 and skip 6.2  
☒ No, go to 6.2 and skip 6.1
- ☐ 6.1 Bucket seats:  
 Locate and mark the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ☒ 6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
- ☐ 6.2.1 Driver Seat  
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- ☐ 6.2.2 Front Outboard Passenger Seat  
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)  
☐ Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_  
☐ Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. \_\_\_\_\_
- ☒ 6.2.3 Rear designated seating positions  
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline.
- ☒ 7. Position the test dummies according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ☒ 8. Fasten the seat belt latch.
- ☒ 9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
- ☒ 10. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
- ☒ Contact Force (lb): **0.6**  
☒ 0.0 to 0.7 pounds – Pass  
☐ **Greater than 0.7 pounds - FAIL**

REMARKS:

Signature: Edward B. Musak

Date: 9/9/16

I certify that I have read and performed each instruction.

# DATA SHEET 10

## BELT CONTACT FORCE (\$7.4.3)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION:	Right Rear Passenger
------------------------------	----------------------

- |                                     |     |   |
|-------------------------------------|-----|---|
| <input checked="" type="checkbox"/> | 1.  | Does the vehicle incorporate a webbing tension-relieving device?  |
|                                     |     | <input type="checkbox"/> Yes (this form is complete)  |
|                                     |     | <input checked="" type="checkbox"/> No (continue with this check sheet)   |
| <input checked="" type="checkbox"/> | 2.  | Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)   |
|                                     |     | <input checked="" type="checkbox"/> N/A – No lumbar adjustment  |
| <input checked="" type="checkbox"/> | 3.  | Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)   |
|                                     |     | <input checked="" type="checkbox"/> N/A – No additional support adjustment  |
| <input checked="" type="checkbox"/> | 4.  | Is the fore-aft position of the seat adjustable?  |
|                                     |     | <input checked="" type="checkbox"/> No – go to 5  |
|                                     |     | <input type="checkbox"/> Yes – go to 4.1  |
| <input type="checkbox"/>            | 4.1 | Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. <b>Mark</b> this position. (8/31/95 legal interpretation to Hogan and Hartson)   |
| <input type="checkbox"/>            | 4.2 | Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. <b>Mark</b> this position. (8/31/95 legal interpretation to Hogan and Hartson)  |
| <input type="checkbox"/>            | 4.3 | <b>Mark</b> each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, <b>mark</b> each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interpretation to Hogan and Hartson) |
| <input type="checkbox"/>            | 4.4 | Move the seat to the mid position.  |
| <input type="checkbox"/>            | 4.5 | While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.  |
| <input checked="" type="checkbox"/> | 5.  | Is the seat back angle adjustable?  |
|                                     |     | <input checked="" type="checkbox"/> No- go to 6   |
|                                     |     | <input type="checkbox"/> Yes- go to 5.1   |
| <input type="checkbox"/>            | 5.1 | Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a 50 <sup>th</sup> percentile adult male in the manner specified by the manufacturer.   |
|                                     |     | <input type="checkbox"/> N/A – No seat back angle adjustment  |
|                                     |     | <input type="checkbox"/> Manufacturer's design seat back angle: _____   |
|                                     |     | <input type="checkbox"/> Tested seat back angle: _____  |

- ☒ 6. Is the seat a bucket seat?
- ☐ Yes, go to 6.1 and skip 6.2
- ☒ No, go to 6.2 and skip 6.1
- ☐ 6.1 Bucket seats:  
Locate and mark the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ☒ 6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
- ☐ 6.2.1 Driver Seat  
Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- ☐ 6.2.2 Front Outboard Passenger Seat  
Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
- ☐ Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_
- ☐ Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. \_\_\_\_\_
- ☒ 6.2.3 Rear designated seating positions  
Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline.
- ☒ 7. Position the test dummies according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ☒ 8. Fasten the seat belt latch.
- ☒ 9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
- ☒ 10. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
- ☒ Contact Force (lb): **0.5**
- ☒ 0.0 to 0.7 pounds – Pass
- ☐ **Greater than 0.7 pounds - FAIL**

REMARKS:

Signature: Edward B. Musak

Date: 9/9/16

I certify that I have read and performed each instruction.

# DATA SHEET 11

## LATCH PLATE ACCESS (S7.4.4)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test all front outboard seat belts **other than those in** walk-in van-type vehicles and those at front outboard designated seating positions in **passenger cars**. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION:	Not Applicable For Any Position - Passenger Car
------------------------------	---

- ☐ 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
- ☐ N/A – No lumbar adjustment
- ☐ 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
- ☐ N/A – No additional support adjustment
- ☐ 3. Is the fore-aft position of the seat adjustable?
- ☐ No – go to 4
- ☐ Yes – go to 3.1
- ☐ 3.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interpretation to Hogan and Hartson)
- ☐ 3.2 While maintaining the forward most position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- ☐ 4. Is the seat back angle adjustable?
- ☐ No- go to 5
- ☐ Yes- go to 4.1
- ☐ 4.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50<sup>th</sup> percentile adult male** in the manner specified by the manufacturer.
- ☐ N/A – No seat back angle adjustment
- ☐ Manufacturer's design seat back angle: \_\_\_\_\_
- ☐ Tested seat back angle: \_\_\_\_\_
- ☐ 5. Is the seat a bucket seat?
- ☐ Yes, go to 5.1 and skip 5.2
- ☐ No, go to 5.2 and skip 5.1
- ☐ 5.1 Bucket seats:  
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ☐ 5.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
- ☐ 5.2.1 Driver Seat  
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

☐ 5.2.2 Front Outboard Passenger Seat

Locate and **mark** the longitudinal centerline of the passenger seat cushion.

The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

☐ Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_

☐ Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. \_\_\_\_\_

☐ 6. Position the test dummy using the procedures in Appendix F. (Some modifications to the positioning procedure may need to be made because the seat is in the forward most position. Note on the Appendix F positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy). **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**

☐ 7. Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50<sup>th</sup> percentile adult male occupant.

☐ 8. Attach the inboard reach string to the base of the head following the instructions on Figure 3.

☐ 9. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.

☐ 10. Place the latch plate in the stowed position.

☐ 11. Extend the inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

☐ Yes – Pass

☐ No

☐ 12. Extend the outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

☐ Yes – Pass

☐ No

☐ 13. Is the latch plate within the inboard (item 11) or outboard (item 12) reach envelope?

☐ Yes – Pass

☐ No – Fail

☐ 14. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

☐ Yes – Pass

☐ No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Musak

Date: 9/9/16

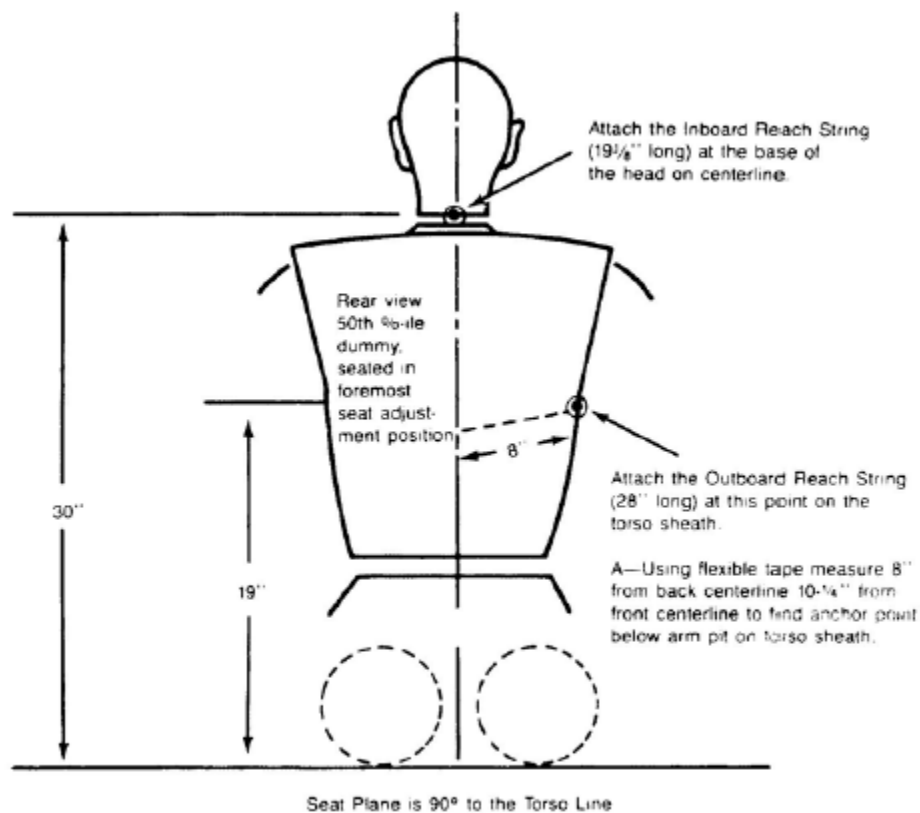


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

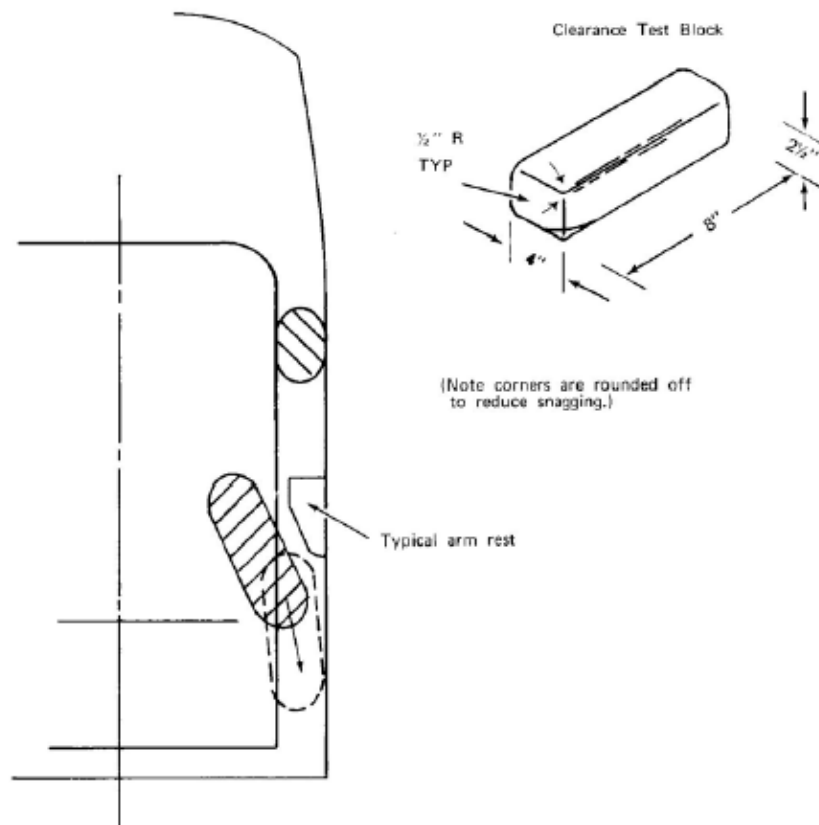


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

## DATA SHEET 12

### SEAT BELT RETRACTION (S7.4.5)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION:	Not Applicable For Any Position – Passenger Car
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- ☒ 1. Is the vehicle a passenger car or walk-in van-type vehicle?
  - ☒ Yes, this form is complete
  - ☐ No
- ☐ 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
  - ☐ N/A – No lumbar adjustment
- ☐ 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
  - ☐ N/A – No additional support adjustment
- ☐ 4. Is the fore-aft position of the seat adjustable?
  - ☐ No – go to 5
  - ☐ Yes – go to 4.1
- ☐ 4.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interpretation to Hogan and Hartson)
- ☐ 4.2 Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interpretation to Hogan and Hartson)
- ☐ 4.3 **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interpretation to Hogan and Hartson)
- ☐ 4.4 Move the seat to the mid position.
- ☐ 4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- ☐ 5. Is the seat back angle adjustable?
  - ☐ No- go to 6
  - ☐ Yes- go to 5.1
- ☐ 5.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50<sup>th</sup> percentile adult male** in the manner specified by the manufacturer.
  - ☐ N/A – No seat back angle adjustment
  - ☐ Manufacturer's design seat back angle: \_\_\_\_\_
  - ☐ Tested seat back angle: \_\_\_\_\_
- ☐ 6. Is the seat a bucket seat?
  - ☐ Yes, go to 6.1 and skip 6.2
  - ☐ No, go to 6.2 and skip 6.1

- ☐ 6.1 Bucket Seats:  
Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ☐ 6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
- ☐ 6.2. Driver Seat
- ☐ 1 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- ☐ 6.2. Front Outboard Passenger Seat
- ☐ 2 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
- ☐ Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_
- ☐ Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. \_\_\_\_\_
- ☐ 7. Position the Part 572 Subpart E test dummy according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ☐ 8. Fasten the seat belt around the dummy.
- ☐ 9. Remove all slack from the lap belt portion. (S10.9)
- ☐ N/A, the seat does not have a fore-aft adjustment
- ☐ 10. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)
- ☐ 11. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
- Pound load applied:**
- ☐ 12. Is the belt system equipped with a tension relieving device?
- ☐ Yes, continue
- ☐ No, go to 14
- ☐ 13. Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).
- ☐ 14. Check the statement that applies to this test vehicle:
- ☐ 14.1 The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.
- ☐ Yes – Pass go to 16
- ☐ No – go to 14.2
- ☐ 14.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.
- ☐ Yes – Pass go to 15
- ☐ No – go to 14.3
- ☐ 14.3 Neither 14.1 nor 14.2 apply.
- ☐ Fail
- ☐ 15. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
- ☐ Yes – Pass
- ☐ No – Fail



- ☐ 16. If this test vehicle has an open body (without doors) and has a belt system with a tension relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

☐ N/A – Not an open body vehicle

☐ Yes – Pass

☐ No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: Edward B. Musak Date: 9/9/16

# **DATA SHEET 13** **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: Left Rear Passenger

- |                                     |     |  |   |   |
|-------------------------------------|-----|--|---|---|
| <input checked="" type="checkbox"/> | 1.  | Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))  | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 2                             |
| <input checked="" type="checkbox"/> | 2.  | Is the seat removable? (S7.4.6.1(b))   | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 3                             |
| <input checked="" type="checkbox"/> | 3.  | Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))  | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 4                             |
| <input checked="" type="checkbox"/> | 4.  | Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))  | <input type="checkbox"/> Yes, go to 5               | <input checked="" type="checkbox"/> No, this form is complete               |
| <input type="checkbox"/>            | 5.  | Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a)) | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
|                                     |     | Identify the part(s) on top or above the seat.   | <input type="checkbox"/> Seat belt latch plate      | <input type="checkbox"/> Buckle <input type="checkbox"/> Seat belt webbing  |
| <input type="checkbox"/>            | 6.  | Are the remaining two seat belt parts accessible under normal conditions?  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 7.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)   | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 8.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 9.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 10. | Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail <input type="checkbox"/> N/A – Rear seat |

REMARKS:

Signature: Edward S. Husak

Date: 9/9/16

I certify that I have read and performed each instruction.

# DATA SHEET 13

## SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: **Center Rear Passenger**

- |                                     |     |  |   |   |
|-------------------------------------|-----|--|---|---|
| <input checked="" type="checkbox"/> | 1.  | Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))  | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 2                             |
| <input checked="" type="checkbox"/> | 2.  | Is the seat removable? (S7.4.6.1(b))   | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 3                             |
| <input checked="" type="checkbox"/> | 3.  | Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))  | <input type="checkbox"/> Yes, this form is complete | <input checked="" type="checkbox"/> No, go to 4                             |
| <input checked="" type="checkbox"/> | 4.  | Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))  | <input type="checkbox"/> Yes, go to 5               | <input checked="" type="checkbox"/> No, this form is complete               |
| <input type="checkbox"/>            | 5.  | Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a)) | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
|                                     |     | Identify the part(s) on top or above the seat.   | <input type="checkbox"/> Seat belt latch plate      | <input type="checkbox"/> Buckle <input type="checkbox"/> Seat belt webbing  |
| <input type="checkbox"/>            | 6.  | Are the remaining two seat belt parts accessible under normal conditions?  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 7.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)   | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 8.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 9.  | The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail  |
| <input type="checkbox"/>            | 10. | Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)  | <input type="checkbox"/> Yes – Pass                 | <input type="checkbox"/> No – Fail <input type="checkbox"/> N/A – Rear seat |

REMARKS:

Signature: Edward S. Husak

Date: 9/9/16

I certify that I have read and performed each instruction.

# DATA SHEET 13

## SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ed Husak

NHTSA No.: C20164101  
 Test Date: 9/9/16

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: Right Rear Passenger

- ☒ 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))  
☐ Yes, this form is complete ☒ No, go to 2
- ☒ 2. Is the seat removable? (S7.4.6.1(b))  
☐ Yes, this form is complete ☒ No, go to 3
- ☒ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))  
☐ Yes, this form is complete ☒ No, go to 4
- ☒ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))  
☐ Yes, go to 5 ☒ No, this form is complete
- ☐ 5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))  
☐ Yes – Pass ☐ No – Fail  
 Identify the part(s) on top or above the seat.  
☐ Seat belt latch plate ☐ Buckle ☐ Seat belt webbing
- ☐ 6. Are the remaining two seat belt parts accessible under normal conditions?  
☐ Yes – Pass ☐ No – Fail
- ☐ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)  
☐ Yes – Pass ☐ No – Fail
- ☐ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)  
☐ Yes – Pass ☐ No – Fail
- ☐ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)  
☐ Yes – Pass ☐ No – Fail
- ☐ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)  
☐ Yes – Pass ☐ No – Fail ☐ N/A – Rear seat

REMARKS:

Signature: Edward S. Husak

Date: 9/9/16

I certify that I have read and performed each instruction.

## DATA SHEET 16

### AIR BAG SUPPRESSION TELLTALE (S19.2.2)

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ed Husak

NHTSA No.: C20164101  
Test Date: 9/14/16

- ☒ 1. Is the vehicle certified to any suppression performance standards of FMVSS 208?  
☒ Yes - go to 2  
☐ No - this form is complete
- ☒ 2. Does telltale emit yellow light when the air bag is suppressed? (S19.2.2 (a))  
☒ Yes - Pass **NO - FAIL**
- ☒ 3. Are the words "PASSENGER AIR BAG OFF" or "PASS AIR BAG OFF" (S19.2.2 (b))  
☒ 3.1 on the telltale? (S19.2.2 (b))  
☒ Yes - Pass, go to 4  
☐ No - go to 3.2
- ☐ 3.2 Within 25 mm of the telltale? (S19.2.2 (b)) ☐ mm from the edge of the telltale light  
☐ Yes - Pass **NO - FAIL**
- ☒ 4. Is the telltale separate from the air bag readiness indicator? (S19.2.2(c))  
☒ Yes - Pass **NO - FAIL**
- ☒ 5. Is the telltale within the interior of the vehicle? (S19.2.2 (d))  
☒ Yes - Pass **NO - FAIL**
- ☒ 6. Is the telltale forward of and above the design H-point of both the driver's and the front outboard passenger's seat when the seats are in their forwardmost seating positions? (S19.2.2 (d))  
☒ Yes - Pass **NO - FAIL**
- ☒ 7. Is the telltale away from surfaces that can be used for temporary or permanent storage of objects that could obscure the telltale from either the driver's or front outboard passenger's view? (S19.2.2 (d))  
☒ Yes - Pass **NO - FAIL**
- ☒ 8. Is the telltale located so that it is not obscured from the driver or front outboard passenger by a rear-facing child restraint in Appendix A installed in the front outboard passenger seat? (S19.2.2 (d))  
☒ Yes - Pass **NO - FAIL**
- ☒ 9. Is the telltale visible or recognizable during the night? (S19.2.2 (e))  
☒ Yes - Pass **NO - FAIL**
- ☒ 10. Is the telltale visible or recognizable during the day? (S19.2.2 (e))  
☒ Yes - Pass **NO - FAIL**
- ☒ 11. If there is a visibility adjustment, do all the adjustment levels make the telltale visible and recognizable? (S19.2.2 (g))  
☐ N/A-No visibility adjustment  
☒ Yes - Pass **NO - FAIL**
- ☒ 12. Does the telltale remain illuminated while the air bag is suppressed? (S19.2.2 (h)) (Leave the air bag suppressed for 5 minutes.)  
☒ Yes - Pass **NO - FAIL**
- ☒ 13. Is the telltale off while the air bag is activated? (S19.2.2 (h)) (Leave the air bag activated for 5 minutes.)  
☒ Yes - Pass **NO - FAIL**

Signature: Edward B. Husak

Date: 9/14/16

I certify that I have read and performed each instruction.

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN:	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Cosco
CHILD RESTRAINT MODEL:	Arriva 22-049 (same as model 22-013)
DATE OF MANUFACTURE:	8-20-2008

Base:   X   On    Off    N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 17*	130	Suppressed
	Middle	129	Suppressed
	Rearward	127	Suppressed
Unbelted Rear Facing	Forward	N/A	Won't Fit
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 10*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN:	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Cosco
CHILD RESTRAINT MODEL:	Arriva 22-049 (same as model 22-013)
DATE OF MANUFACTURE:	8-20-2008

Base: \_\_On X Off \_\_N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 17*	131	Suppressed
	Middle	129	Suppressed
	Rearward	128	Suppressed
Unbelted Rear Facing	Forward 18*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 5*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Middle position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 17 SUMMARY

Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)  
Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN:	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Graco
CHILD RESTRAINT MODEL:	Snugride
DATE OF MANUFACTURE:	5-24-2007

Base:   X   On    Off    N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 8*	133	Suppressed
	Middle	131	Suppressed
	Rearward	130	Suppressed
Unbelted Rear Facing	Forward 13*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 11*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed



## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN:	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Graco
CHILD RESTRAINT MODEL:	Snugride
DATE OF MANUFACTURE:	5-24-2007

Base: \_\_On X Off \_\_N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

#### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 6*	129	Suppressed
	Middle	130	Suppressed
	Rearward	127	Suppressed
Unbelted Rear Facing	Forward 14*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 2*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Middle position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Peg Perego
CHILD RESTRAINT MODEL:	Viaggio
DATE OF MANUFACTURE:	8-27-2007

Base: ☒ On ☐ Off ☐ N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 5*	131	Suppressed
	Middle	129	Suppressed
	Rearward	130	Suppressed
Unbelted Rear Facing	Forward 9*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 9*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section B Rear Facing CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Peg Perego
CHILD RESTRAINT MODEL:	Viaggio
DATE OF MANUFACTURE:	8-27-2007

Base: \_\_On \_\_X\_\_Off \_\_N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Rear Facing	Forward 4*	128	Suppressed
	Middle	131	Suppressed
	Rearward	130	Suppressed
Unbelted Rear Facing	Forward 8*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Forward Facing	Forward 7*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Rearward position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section C Forward Facing Convertible CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Britax
CHILD RESTRAINT MODEL:	Roundabout E9L02
DATE OF MANUFACTURE:	7-2-2008

Base: \_\_On \_\_Off X N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back  
 Tested seat back angle: 23.9° on Seat Back  
 Manufacturer's specified anchorage position: No Adjustment  
 Tested anchorage position: No Adjustment

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Forward Facing	Forward 1*	131	Suppressed
	Middle	132	Suppressed
	Rearward	129	Suppressed
Unbelted Forward Facing	Forward 1*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Belted Rear Facing	Forward 8*	133	Suppressed
	Middle	130	Suppressed
	Rearward	128	Suppressed
Unbelted Rear Facing	Forward 11*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Middle position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section C Forward Facing Convertible CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Cosco
CHILD RESTRAINT MODEL:	Summit Deluxe High Back Booster 22-262
DATE OF MANUFACTURE:	8-9-2007

Base: \_\_On \_\_Off X N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Forward Facing	Forward	131	Suppressed
	Middle	127	Suppressed
	Rearward	129	Suppressed
Unbelted Forward Facing	Forward	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Rear Facing	Forward	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Forward position. (Human Identification Code 036; 49.9 kg 149.9 cm)

The Cosco Summit Deluxe High Back Booster 22-262 does not have a rear facing belt path.

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section C Forward Facing Convertible CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Evenflo
CHILD RESTRAINT MODEL:	Tribute V 379
DATE OF MANUFACTURE:	6-20-2008

Base: \_\_On \_\_Off X N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back  
 Tested seat back angle: 23.9° on Seat Back  
 Manufacturer's specified anchorage position: No Adjustment  
 Tested anchorage position: No Adjustment

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Forward Facing	Forward	132	Suppressed
	Middle	129	Suppressed
	Rearward	127	Suppressed
Unbelted Forward Facing	Forward	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Belted Rear Facing	Forward 4*	130	Suppressed
	Middle	133	Suppressed
	Rearward	132	Suppressed
Unbelted Rear Facing	Forward 8*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Forward position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 17 SUMMARY

### Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R) Section C Forward Facing Convertible CRS

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN(S):	EH
DUMMY TYPE:	12 Month Old	DUMMY SERIAL NO.:	062

CHILD RESTRAINT NAME:	Graco
CHILD RESTRAINT MODEL:	Toddler SafeSeat Step 2
DATE OF MANUFACTURE:	5-24-2007

Base: \_\_On \_\_Off X N/A-Constraint does not have a removable base

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Manufacturer's specified anchorage position: No Adjustment

Tested anchorage position: No Adjustment

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

### Test Summary

Seat Belt	Seat Slide	Cinch Load (N)	Result
Belted Forward Facing	Forward 2*	132	Suppressed
	Middle	130	Suppressed
	Rearward	130	Suppressed
Unbelted Forward Facing	Forward 4*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed
Unbelted Rear Facing	Forward 7*	N/A	Suppressed
	Middle	N/A	Suppressed
	Rearward	N/A	Suppressed

\* The CRS would not fit in the Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft position with respect to the foremost position. (1 = Full Forward; 37 = Full Rearward; 37 Total Detents)

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Rearward position. (Human Identification Code 036; 49.9 kg 149.9 cm)

## DATA SHEET 18 SUMMARY

### Suppression Test Using Newborn Infant Dummy (Part 572, Subpart K) Section A Car Bed

NHTSA NO.:	C20164101	TEST DATE:	9/14/16
LABORATORY:	MGA	TECHNICIAN:	EH
DUMMY TYPE:	Newborn Infant	DUMMY SERIAL NO.:	003

CAR BED NAME:	Angel Guard
CAR BED MODEL:	Angel Ride
DATE OF MANUFACTURE:	4-15-2008

Base: ☐ On ☐ Off ☒ N/A-Restraint does not have a removable base  
(A car bed with a removable base shall be treated as two separate models, i.e. this form and test procedure will be completed with the base on and then repeated on a new form with the base off.)

Manufacturer's design seat back angle: 23.9° on Seat Back  
Tested seat back angle: 23.9° on Seat Back  
Manufacturer's specified anchorage position: No Adjustment  
Tested anchorage position: No Adjustment

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

#### Test Summary

Seat Belt	Seat Slide	Result
Belted	Forward	Suppressed
	Middle	Suppressed
	Rearward	Suppressed

Successful unbelted representative 5th percentile female reactivation was performed with the seat in the Forward position. (Human Identification Code 036; 49.9 kg 149.9 cm)



## DATA SHEET 25 SUMMARY

Low Risk Deployment Tests Using an Unbelted 3 Year Old Dummy  
(Part 572, Subpart P) (S22) Position 1 - Chest On Instrument Panel (S22.4.2)

NHTSA NO.:	C20164101	TEST DATE:	9/20/16
LABORATORY:	MGA	TECHNICIAN(S):	EH BJ JL
DUMMY TYPE:	3 Year Old	DUMMY SERIAL NO.:	031

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Tested seat position: Full Aft

Thorax cavity angle: 0.1°

Thigh angle: 33.2°

Point 1 height: 39 mm - Below Plane C Air Bag Height

### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

### 3-Year-Old SN 031 Position 1 (Chest on Instrument Panel) 9/20/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	570	69
Peak Nij (Nte)	1.0	0.2
Time (ms)	NA	53.7
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	11.0
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	9.5
Peak Nij (Ncf)	1.0	0.3
Time (ms)	NA	15.4
Neck Tension	1130 N	261
Neck Compression	1380 N	356
Chest g	55 g	15
Chest Displacement	34 mm	9

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

**A new air bag and instrument panel were used for this deployment.**

## DATA SHEET 26 SUMMARY

Low Risk Deployment Tests Using an Unbelted 3 Year Old Dummy  
(Part 572, Subpart P) (S22) Position 2 - Head On Instrument Panel (S22.4.3)

NHTSA NO.:	C20164101	TEST DATE:	9/19/16
LABORATORY:	MGA	TECHNICIAN(S):	EH BJ JL
DUMMY TYPE:	3 Year Old	DUMMY SERIAL NO.:	031

Manufacturer's design seat back angle: 23.9° on Seat Back  
Tested seat back angle: 23.9° on Seat Back  
Tested seat position: Full Forward

Thorax cavity angle: 0.2°  
Thigh angle: 8.3°

### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

### 3-Year-Old SN 031 Position 2 (Head on Instrument Panel) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	570	3
Peak Nij (Nte)	1.0	0.1
Time (ms)	NA	100.0
Peak Nij (Ntf)	1.0	0.0
Time (ms)	NA	11.3
Peak Nij (Nce)	1.0	0.4
Time (ms)	NA	23.3
Peak Nij (Ncf)	1.0	0.0
Time (ms)	NA	14.1
Neck Tension	1130 N	19
Neck Compression	1380 N	411
Chest g	55 g	4
Chest Displacement	34 mm	0

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

**The original equipment parts were used for this deployment.**

## DATA SHEET 27 SUMMARY

Low Risk Deployment Tests Using an Unbelted 6-Year-Old Dummy (Part 572, Subpart N) (S24)  
Position 1 – Chest on Instrument Panel (S24.4.2)

NHTSA NO.:	C20164101	TEST DATE:	9/21/16
LABORATORY:	MGA	TECHNICIAN(S):	EH BJ JL
DUMMY TYPE:	6 Year Old	DUMMY SERIAL NO.:	155

Manufacturer's design seat back angle: 23.9° on Seat Back

Tested seat back angle: 23.9° on Seat Back

Tested seat position: Full Aft

Thorax cavity angle: 6.0°

Point 1 height: 104 mm Below Plane C Air Bag Height

### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

### 6-Year-Old SN 155 Position 1 (Chest on Instrument Panel 9/21/16)

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	67
Peak Nij (Nte)	1.0	0.3
Time (ms)	NA	80.4
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	21.9
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	9.5
Peak Nij (Ncf)	1.0	0.3
Time (ms)	NA	16.2
Neck Tension	1490 N	366
Neck Compression	1820 N	278
Chest g	60 g	11
Chest Displacement	40 mm	5

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

**A new air bag and instrument panel were used for this deployment.**

## DATA SHEET 28 SUMMARY

Low Risk Deployment Tests Using an Unbelted 6 Year Old Dummy  
(Part 572, Subpart N) (S24) Position 2 - Head On Instrument Panel (S24.4.3)

NHTSA NO.:	C20164101	TEST DATE:	9/20/16
LABORATORY:	MGA	TECHNICIAN(S):	EH BJ JL
DUMMY TYPE:	6 Year Old	DUMMY SERIAL NO.:	155

Manufacturer's design seat back angle: 23.9° on Seat Back  
Tested seat back angle: 23.9° on Seat Back  
Tested seat position: Full Forward

Thorax cavity angle: 17.4°  
Thigh angle: 9.2°

### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

### 6-Year-Old SN 155 Position 2 (Head on Instrument Panel) 9/20/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	7
Peak Nij (Nte)	1.0	0.1
Time (ms)	NA	88.3
Peak Nij (Ntf)	1.0	0.0
Time (ms)	NA	0.9
Peak Nij (Nce)	1.0	0.4
Time (ms)	NA	25.0
Peak Nij (Ncf)	1.0	0.2
Time (ms)	NA	12.9
Neck Tension	1490 N	46
Neck Compression	1820 N	535
Chest g	60 g	4
Chest Displacement	40 mm	0

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

**A new air bag and instrument panel were used for this deployment.**

## DATA SHEET 29 SUMMARY

Low Risk Deployment Tests Using an Unbelted 5<sup>th</sup> Percentile Female  
Dummy (Part 572, Subpart O) (S26) Position 1 - Chin On Module (S26.2)

NHTSA NO.:	C20164101	TEST DATE:	9/19/16
LABORATORY:	MGA	TECHNICIAN:	EH BJ JL
DUMMY TYPE:	5 <sup>th</sup> Percentile Female	DUMMY SERIAL NO.:	125

Manufacturer's design seat back angle: 23.9° on Seat Back  
Tested seat back angle: 23.9° on Seat Back  
Tested seat position: Full Aft  
  
Tested steering wheel angle: 20.3°  
Thorax cavity angle: 26.4°  
Bottom of chin height: 0 mm – At Plane F Module Height

### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

### 5<sup>th</sup> Percentile Female SN 125 Position 1 (Chin On Module) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	14
Peak Nij (Nte)	1.0	0.4
Time (ms)	NA	67.8
Peak Nij (Ntf)	1.0	0.4
Time (ms)	NA	10.7
Peak Nij (Nce)	1.0	0.3
Time (ms)	NA	201.7
Peak Nij (Ncf)	1.0	0.1
Time (ms)	NA	251.2
Neck Tension	2070 N	1120
Neck Compression	2520 N	346
Chest g	60 g	12
Chest Displacement	52 mm	6
Left Femur	6805 N	131
Right Femur	6805 N	178

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11 (d))  
Second stage fire time of 250 ms; Injuries calculated on 0 ms to 375 ms.

**The original equipment parts were used for this deployment.**

### DATA SHEET 30 SUMMARY

Low Risk Deployment Tests Using an Unbelted 5<sup>th</sup> Percentile Female Dummy (Part 572, Subpart O) (S26) Position 2 - Chin On Rim (S26.3)

NHTSA NO.:	C20164101	TEST DATE:	9/19/16
LABORATORY:	MGA	TECHNICIAN:	EH BJ JL
DUMMY TYPE:	5 <sup>th</sup> Percentile Female	DUMMY SERIAL NO.:	125

Manufacturer's design seat back angle: 23.9° on Seat Back  
Tested seat back angle: 23.9° on Seat Back  
Tested seat position: Full Aft

Tested steering wheel angle: 18.8° \*  
Thorax cavity angle: 25.1°  
Chin Point height: 3 mm - Below Steering Wheel Target  
Note: The chin on rim steering wheel target is 10 mm below the highest point on the steering wheel

\*The dummy contacted the windshield with the steering wheel at mid position. The steering controls were adjusted to lower the upper steering wheel rim the necessary amount to bring the Chin Point coincident with the upper steering wheel rim. The rear thorax cavity was adjusted along with the steering wheel angle.

#### Air Bag Deployment Timing

Stage No.	Firing time (ms)	Recorded firing time (ms)
1	0.0	0.0
2	250.0	250.0

#### 5<sup>th</sup> Percentile Female SN 125 Position 2 (Chin On Rim) 9/19/16

Injury Criteria	Max. Allowable Injury Assessment Values	Measured Value
HIC15	700	11
Peak Nij (Nte)	1.0	0.7
Time (ms)	NA	22.1
Peak Nij (Ntf)	1.0	0.2
Time (ms)	NA	49.9
Peak Nij (Nce)	1.0	0.0
Time (ms)	NA	331.9
Peak Nij (Ncf)	1.0	0.2
Time (ms)	NA	52.4
Neck Tension	2070 N	1124
Neck Compression	2520 N	96
Chest g	60 g	18
Chest Displacement	52 mm	17
Left Femur	6805 N	16
Right Femur	6805 N	59

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11 (d))  
Second stage fire time of 250 ms; Injuries calculated on 0 ms to 375 ms.

**A new air bag and the original equipment parts were used for this deployment.**

## DATA SHEET 32

### VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

- |   |     |   |
|---|-----|---|
| X | 1.  | Fill the transmission with transmission fluid to the satisfactory range.  |
| X | 2.  | Drain fuel from vehicle.  |
| X | 3.  | Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.   |
| X | 4.  | Record the useable fuel tank capacity supplied by the COTR.   |
| X |     | Useable Fuel Tank Capacity supplied by COTR: 59.8 liters (15.8 gallons)   |
| X | 5.  | Record the fuel tank capacity supplied in the owner's manual.   |
| X |     | Useable Fuel Tank Capacity in owner's manual: 59.8 liters (15.8 gallons)  |
| X | 6.  | Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry-cleaning Solvents," or gasoline, fill the fuel tank. |
| X |     | Amount Added: 59.8 liters (15.8 gallons)  |
| X | 7.  | Fill the coolant system to capacity.  |
| X | 8.  | Fill the engine with motor oil to the Max. mark on the dip stick.   |
| X | 9.  | Fill the brake reservoir with brake fluid to its normal level.  |
| X | 10. | Fill the windshield washer reservoir to capacity.   |
| X | 11. | Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner's manual.   |

Tire placard pressure:	RF:	32 psi	LF:	32 psi	RR:	32 psi	LR:	32 psi
Owner's manual pressure:	RF:	32 psi	LF:	32 psi	RR:	32 psi	LR:	32 psi
Actual inflated pressure:	RF:	32 psi	LF:	32 psi	RR:	32 psi	LR:	32 psi

- |   |     |  |
|---|-----|--|
| X | 12. | Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight). |
|---|-----|--|

Right Front (kg):	399.2	Right Rear (kg):	376.9
Left Front (kg):	380.6	Left Rear (kg):	368.8
Total Front (kg):	779.8	Total Rear (kg):	745.7
% Total Weight:	51.1	% Total Weight:	48.9
UVW = TOTAL FRONT PLUS TOTAL REAR (KG):		1525.5	

- |   |      |  |
|---|------|--|
| X | 13.  | UVW Test Vehicle Attitude: (All dimensions in millimeters)   |
| X | 13.1 | Mark a point on the vehicle above the center of each wheel.  |
| X | 13.2 | Place the vehicle on a level surface.  |
| X | 13.3 | Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements. |

RF:	718	LF:	723	RR:	705	LR:	713
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- ☒ 14. Calculate the Rated Cargo and Luggage Weight (RCLW): 68 kg
- ☒ 14.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?
- ☒ ☒ Yes, go to 14.3
- ☐ ☐ No, go to 14.2
- ☐ 14.2  $VCW = \text{Gross Vehicle Weight} - UVW$

$$VCW = \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

- ☒ 14.3  $VCW = 408 \text{ kg (899 lbs)}$
- ☒ 14.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?
- ☒ Yes, go to 14.6
- ☐ No, go to 14.5 and skip 14.6
- ☐ 14.5  $DSC = \text{Total number of seat belt assemblies} = \underline{\hspace{2cm}}$
- ☒ 14.6  $DSC = 5$
- ☒ 14.7  $RCLW = VCW - (68 \text{ kg} \times DSC) = 408 \text{ kg} - (68 \text{ kg} \times 5) = 68 \text{ kg}$
- ☒ 14.8 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?
- ☐ Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)
- ☒ No, use the RCLW calculated in 14.7
- ☒ 15. Fully Loaded Weight (100% fuel fill): 1691.1 kg
- ☒ 15.1 Place the appropriate test dummy in both front outboard seating positions.

Driver: ☒ 5<sup>th</sup> female ☐ 50<sup>th</sup> male

Passenger: ☒ 5<sup>th</sup> female ☐ 50<sup>th</sup> male

- ☒ 15.2 Load the vehicle with the RCLW from 14.7 or 14.8 whichever is applicable.
- ☒ 15.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))
- ☒ 15.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.

Right Front (kg):	414.6	Right Rear (kg):	441.4
Left Front (kg):	401.9	Left Rear (kg):	433.2
Total Front (kg):	816.5	Total Rear (kg):	874.6
% Total Weight:	48.3	% Total Weight:	51.7
% GVW	45.6	% GVW	57.4
(% GVW = Axle GVW divided by Vehicle GVW)			
Fully Loaded Weight = Total Front Plus Total Rear (kg):			1691.1

- ☒ 16. Fully Loaded Test Vehicle Attitude: (All dimensions in millimeters)
- ☒ 16.1 Place the vehicle on a level surface.
- ☒ 16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements.

RF:	693	LF:	697	RR:	672	LR:	676
-----	-----	-----	-----	-----	-----	-----	-----

- ☒ 17. Drain the fuel system.



- ☒ 18. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry-cleaning Solvents," fill the fuel tank to 92 - 94 percent of useable capacity.  
☒ Fuel tank capacity x .94 = 59.8 liters (15.8 gallons) x .94 = 56.2 liters (14.9 gallons)  
☒ Amount added: 55.6 liters (14.7 gallons) 93.0%
- ☒ 19. Crank the engine to fill the fuel delivery system with Stoddard solvent.
- ☒ 20. Calculate the test weight range.
- ☒ 20.1 Calculated Weight = UVW (see 12 above) + RCLW (see 14 above) + 2x(dummy weight)  

$$1691.5 \text{ kg} = 1525.5 \text{ kg} + 68.0 \text{ kg} + 98.0 \text{ kg}$$
- ☒ 20.2 Test Weight Range = Calculated Weight (- 4.5 kg, - 9 kg.)  
Max. Test Weight = Calculated Test Weight - 4.5 kg = 1687.0 kg  
Min. Test Weight = Calculated Test Weight - 9 kg = 1682.5 kg
- ☒ 21. Remove the RCLW from the cargo area.
- ☒ 22. Drain transmission fluid, engine coolant, motor oil, and windshield washer fluid from the test vehicle so that Stoddard solvent leakage from the fuel system will be evident.
- ☒ 23. Vehicle Components Removed For Weight Reduction:  
Right Tail Light, Tool Kit, Trunk Interior Trim
- ☒ 24. Secure the equipment and ballast in the load carrying area and distribute it, as nearly as possible, to obtain the proportion of axle weight indicated by the gross axle weight ratings and center it over the longitudinal centerline of the vehicle.
- ☒ 25. If necessary, add ballast to achieve the actual test weight.  
☐ N/A  
☒ Weight of Ballast: 34.0 kg
- ☒ 26. Ballast, including test equipment, must be contained so that it will not shift during the impact event or interfere with data collection or interfere with high-speed film recordings or affect the structural integrity of the vehicle or do anything else to affect test results. Care must be taken to assure that any attachment hardware added to the vehicle is not in the vicinity of the fuel tank or lines.
- ☒ 27. Record the vehicle weight at each wheel to determine the actual test weight.

Right Front (kg):	416.4	Right Rear (kg):	438.2
Left Front (kg):	402.3	Left Rear (kg):	427.3
Total Front (kg):	818.7	Total Rear (kg):	865.5
% Total Weight:	48.6	% Total Weight:	51.4
% GVW	45.6	% GVW	57.4
(% GVW = Axle GVW divided by Vehicle GVW)			
TOTAL FRONT PLUS TOTAL REAR (kg):			1684.2

- ☒ 28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?  
☒ Yes  
☐ No, explain why not.
- ☒ 29. Test Weight Vehicle Attitude: (all dimensions in millimeters)
- ☒ 29.1 Place the vehicle on a level surface.
- ☒ 29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements.

RF:	703	LF:	708	RR:	679	LR:	696
-----	-----	-----	-----	-----	-----	-----	-----

- ☒ 30. Summary of test attitude  
☒ 30.1 AS DELIVERED:

RF:	718	LF:	723	RR:	705	LR:	713
-----	-----	-----	-----	-----	-----	-----	-----

AS TESTED:

RF:	703	LF:	708	RR:	679	LR:	696
-----	-----	-----	-----	-----	-----	-----	-----


FULLY LOADED:

RF:	693	LF:	697	RR:	672	LR:	676
-----	-----	-----	-----	-----	-----	-----	-----

- ☒ 30.2 Is the “as tested” test attitude equal to or between the “fully loaded” and “as delivered” attitude?

- ☒ Yes  
☐ No, explain why not.

REMARKS:

Signature:  Date: 10/3/16

I certify that I have read and performed each instruction.

## DATA SHEET 33

### VEHICLE ACCELEROMETER LOCATION AND MEASUREMENT

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

- ☒ 1. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the left front outboard seating position intersects the left rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
- ☒ 2. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the right front outboard seating position intersects the right rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
- ☒ 3. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect at the top of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- ☒ 4. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect the bottom of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- ☒ 5. Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart.
- ☒ 6. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the top of the instrument panel. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- ☒ 7. Install an accelerometer on the left front brake caliper to record x-direction accelerations. Record the location on the following chart.
- ☒ 8. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the floor of the trunk. Install an accelerometer on the trunk floor at this intersection to record z-direction accelerations. Record the location on the following chart.

REMARKS:

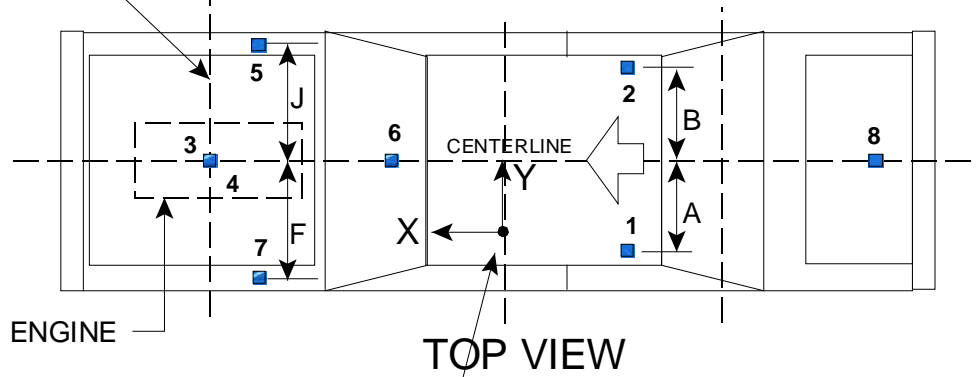
I certify that I have read and performed each instruction.

Signature: 

Date: 10/3/16

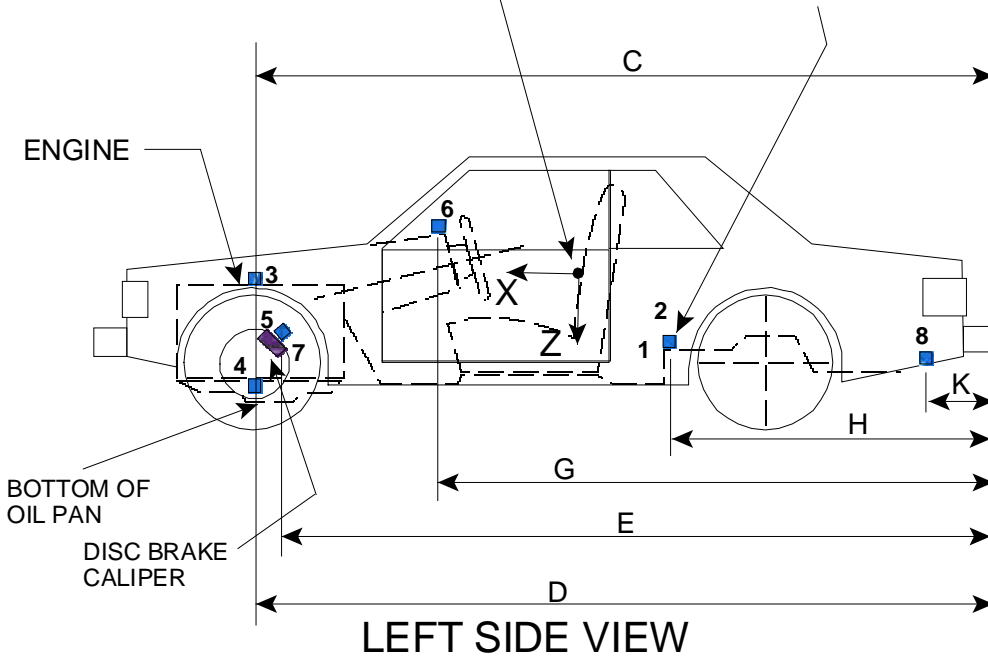
# VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

CENTERLINE OF  
FRONT WHEELS



ACCELEROMETER  
COORDINATE SYSTEM  
(POSITIVE DIRECTION SHOWN)

REAR SEAT CUSHION  
ASSY. FRONT ATTACHMENT  
BRACKET SUPPORT



Dimensions Corresponding To The Letters "A" Through "K" (Excluding "I") Are Recorded In The Table On The Following Page.

Accelerometers Corresponding To The Numbers 1 Through 8 Are Specified On The Preceding Page.

# VEHICLE ACCELEROMETER LOCATION AND MEASUREMENTS

<u>DIMENSION</u>	<u>LENGTH (mm)</u>	
<u>PRETEST VALUES</u>		
<u>A</u> (LH Rear Seat Xmbr)	381	
<u>B</u> (RH Rear Seat Xmbr)	381	
<u>C</u> (Engine Top)	3868	
<u>D</u> (Engine Bottom)	3610	
<u>E</u> (Caliper)	Right Side: 3715	Left Side: 3715
<u>F</u> (Left Caliper)	649	
<u>G</u> (IP)	2940	
<u>H</u> (Seat)	1863	
<u>J</u> (Right Caliper)	649	
<u>K</u> (Trunk)	739	
<u>POST TEST VALUES</u>		
<u>A</u> (LH Rear Seat Xmbr)	381	
<u>B</u> (RH Rear Seat Xmbr)	381	
<u>C</u> (Engine Top)	3851	
<u>D</u> (Engine Bottom)	3551	
<u>E</u> (Caliper)	Right Side: 3692	Left Side: 3695
<u>F</u> (Left Caliper)	659	
<u>G</u> (IP)	2914	
<u>H</u> (Seat)	1863	
<u>J</u> (Right Caliper)	659	
<u>K</u> (Trunk)	739	

























**DATA SHEET 34**

**PHOTOGRAPHIC TARGETS**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Ben Storey

NHTSA No.: C20164101  
Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

- |   |      |   |
|---|------|---|
|    | 1.   | <b>FMVSS 208 vehicle targeting requirements</b> (See Figures 28A and 28B)   |
|    | 1.1  | Targets A1 and A2 are on flat rectangular panels.   |
|    | 1.2  | Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the front on the outboard sides of A1 and A2. The center of each circular target is 100 mm from the one next to it.  |
|    |      | Distance between targets (mm): <u>100 mm</u>  |
|    | 1.3  | Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it.  |
|    |      | Distance between targets (mm): <u>100 mm</u>  |
|    | 1.4  | The distance between the first circular target at the front of A1 and A2 and the last circular target at the back of A1 and A2 is at least 915 mm.  |
|  |      | Distance between the first and last circular targets (mm): <u>915 mm</u>  |
|  | 1.5  | Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy.  |
|  | 1.6  | Firmly fix target A2 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.   |
|  | 1.7  | Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the driver door. The centers of each circular target are at least 610 mm apart.   |
|  |      | Distance between targets (mm): <u>610 mm</u>  |
|  | 1.8  | Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the passenger door. The centers of each circular target are at least 610 mm apart.  |
|  |      | Distance between targets (mm): <u>610 mm</u>  |
|  | 1.9  | Place tape with squares having alternating colors on the top portion of the steering wheel.   |
|  | 1.10 | Chalk the bottom portion of the steering wheel.   |
|  | 1.11 | Is this an offset test?   |
|  |      | <b>Yes, continue with this section</b>  |
|  |      | <b>No, go to 2.</b>   |
|  | 1.12 | Measure the width of the vehicle.   |
|  |      | Vehicle width (mm):   |
|  | 1.13 | Find the centerline of the vehicle. ( $\frac{1}{2}$ of the vehicle width)   |
|  | 1.14 | Find the line parallel to the centerline of the vehicle and 0.1 x vehicle width from the centerline of the vehicle.   |
|  | 1.15 | Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield. (Figure 28D) |

- |                                     |       |   |
|-------------------------------------|-------|---|
| <input checked="" type="checkbox"/> | 2.    | <b>Barrier Targeting</b>  |
| <input checked="" type="checkbox"/> | 2.1   | Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy. |
| <input checked="" type="checkbox"/> | 2.2   | Targets D1 and D2 are on a rectangular panel.   |
| <input checked="" type="checkbox"/> | 2.3   | Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.   |
| <input checked="" type="checkbox"/> |       | Distance between circular targets on D1 (mm): <u>100 mm</u>   |
| <input checked="" type="checkbox"/> |       | Distance between circular targets on D2 (mm): <u>100 mm</u>   |
| <input checked="" type="checkbox"/> | 3.    | <b>FMVSS 208 Dummy Targeting Requirements</b>   |
| <input checked="" type="checkbox"/> | 3.1   | Place a circular target with black and yellow quadrants on both sides of the driver dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).   |
| <input checked="" type="checkbox"/> | 3.2   | Place a circular target with black and yellow quadrants on both sides of the passenger dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).  |
| <input checked="" type="checkbox"/> | 3.3   | Place a circular target with black and yellow quadrants on the outboard shoulder of the driver dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.         |
| <input checked="" type="checkbox"/> | 3.4   | Place a circular target with black and yellow quadrants on the outboard shoulder of the passenger dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.      |
| <input checked="" type="checkbox"/> | 4.    | <b>FMVSS 204 Targeting Requirements</b>   |
| <input checked="" type="checkbox"/> | 4.1   | Is an FMVSS 204 indicant test ordered on the "COTR Vehicle Work Order?"   |
| <input type="checkbox"/>            |       | Yes, continue with this form.   |
| <input checked="" type="checkbox"/> |       | No, this form is complete.  |
| <input type="checkbox"/>            | 4.2   | Resection panel (Figure 28C)  |
| <input type="checkbox"/>            | 4.2.1 | The panel deviates no more than 6 mm from perfect flatness when suspended vertically  |
| <input type="checkbox"/>            | 4.2.2 | The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.   |
| <input type="checkbox"/>            | 4.2.3 | The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.  |
| <input type="checkbox"/>            | 4.2.4 | Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.   |
| <input type="checkbox"/>            | 4.2.5 | The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.  |
| <input type="checkbox"/>            | 4.3   | Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.  |
| <input type="checkbox"/>            | 4.4   | Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash.   |

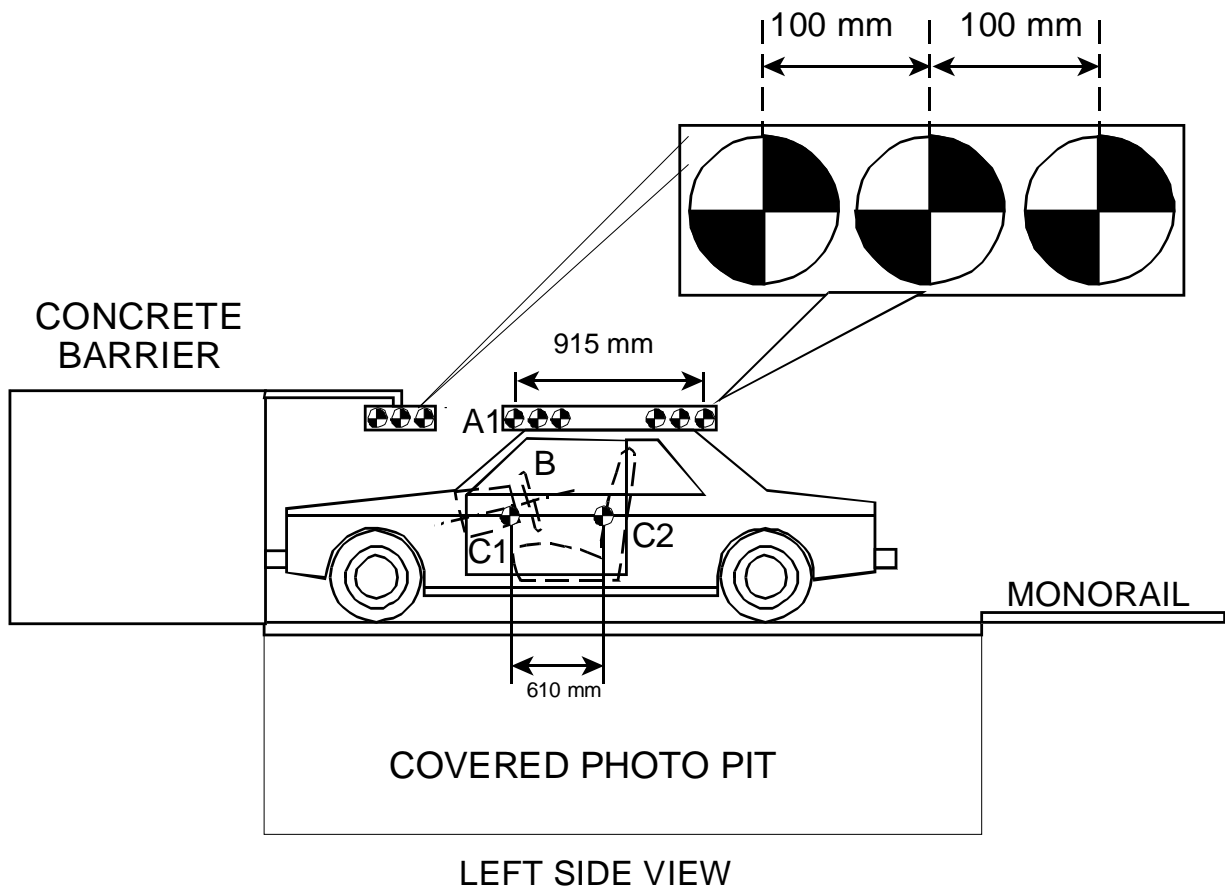
REMARKS:

Signature: 

Date: 10/3/16

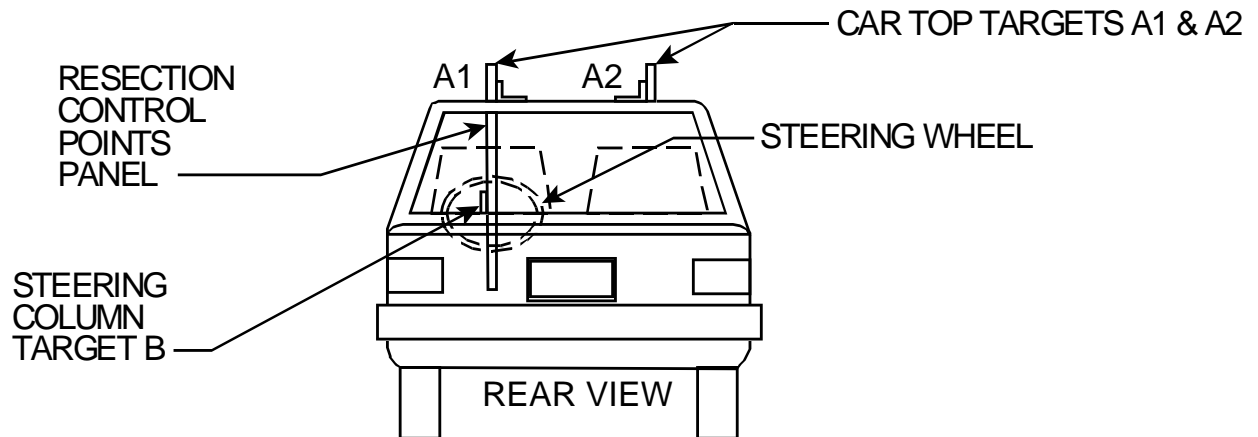
I certify that I have read and performed each instruction.

## REFERENCE PHOTO TARGETS

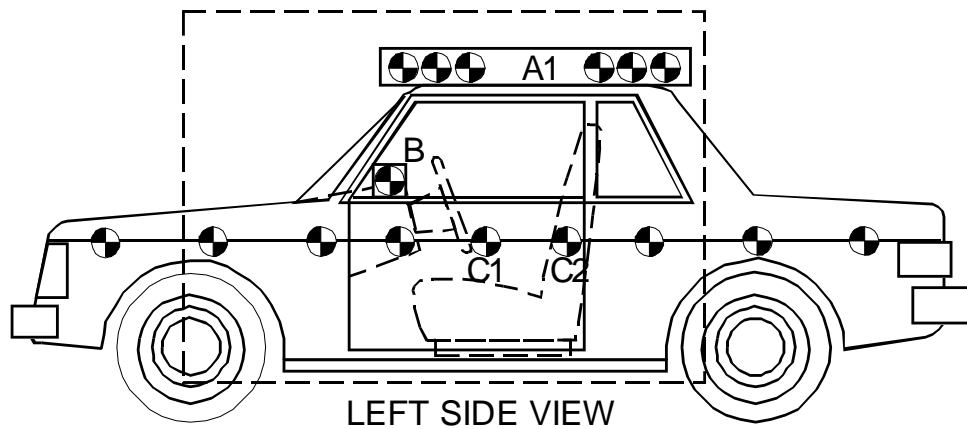




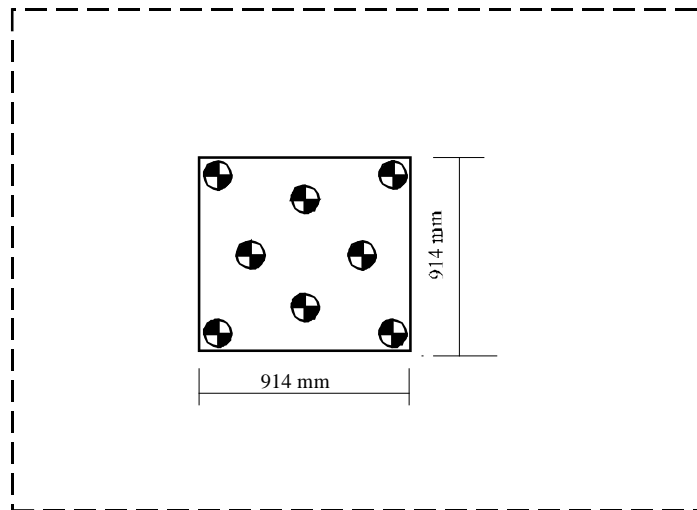
## RESECTION PANEL TARGETING ALIGNMENT



## TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION



## PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW



LEFT SIDE VIEW

**DATA SHEET 35**  
**CAMERA LOCATIONS**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance

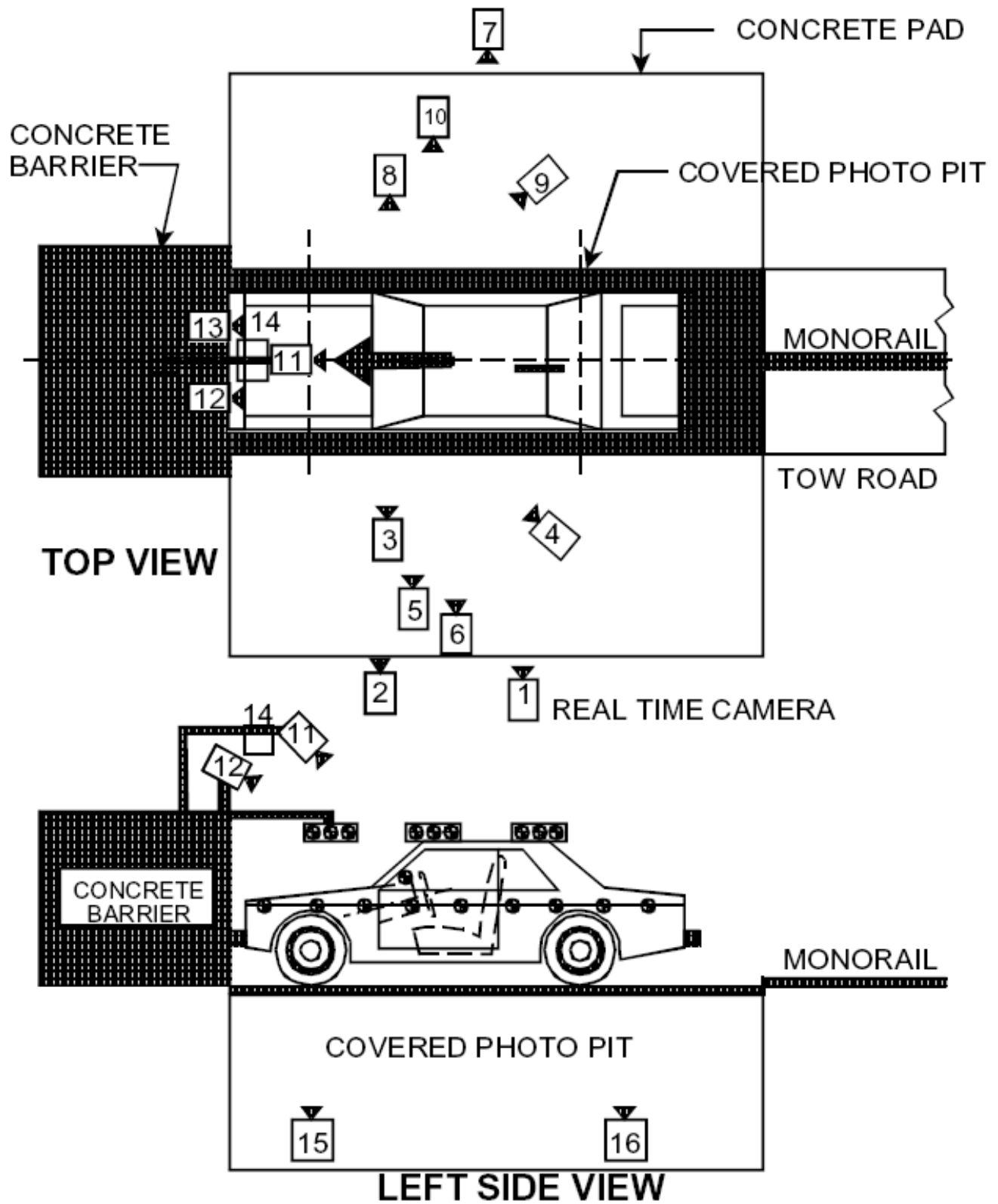
NHTSA No.: C20164101  
Test Date: 10/3/16  
Time: 12:13 PM

CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			LENS (mm)	SPEED (fps)
		X	Y	Z		
1	Real Time Left Side View				13	24
2	Left Side View (Barrier face to front seat backs)	1220	-4790	1240	24	1000
3	Left Side View (Driver)	1730	-6300	2010	35	1000
4	Left Side View (B-post aimed toward center of steering wheel)	6030	-5330	2100	50	1000
5	Left Side View (Steering Column)	670	-4900	1240	24	1000
6	Left Side View (Steering Column)	690	-4870	780	24	1000
7	Right Side View (Overall)	2170	6440	1260	20	1000
8	Right Side View (Passenger)	1720	6880	1970	35	1000
9	Right Side View (Angle)	5990	4770	2050	50	1000
10	Right Side View (Front door)	1260	4830	1230	24	1000
11	Front View Windshield	-170	0	2810	20	1000
12	Front View Driver	290	-450	2030	8.5	1000
13	Front View Passenger	290	450	2030	8.5	1000
14	Overhead Barrier Impact View	2040	0	4910	16	1000
15	Pit Camera Engine View	1370	0	-3150	24	1000
16	Pit Camera Fuel Tank View	3480	0	-3150	24	1000

**\*COORDINATES:**

- +X - forward of impact plane
- +Y - right of monorail centerline
- +Z - above ground level

## CAMERA POSITIONS FOR FMVSS 208



## DATA SHEET 36

### APPENDIX G

#### DUMMY POSITIONING PROCEDURES FOR DRIVER TEST DUMMY CONFORMING TO SUBPART O OF PART 572

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Keegan Strockis

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

#### 1. Seat Position

X 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)

X N/A – No lumbar adjustment

X 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)

X N/A – No additional support adjustment

X 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)

X N/A – No adjustable leg support system

X 1.4 **Mark** a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)

X 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)

X 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)

X 1.7 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)

X N/A – No independent fore-aft seat cushion adjustment

X 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)

Maximum angle: 18.5° Nose Up

Minimum angle: 13.1° Nose Up

Mid-angle: 15.8° Nose Up

- ☒ 1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)  
☐ N/A – No seat height adjustment
- ☒ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ☒ 1.11 Use only the controls that primarily move the seat in the fore-aft direction to **mark** the fore-aft seat positions. **Mark** each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.
- ☒ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ☒ 1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)  
☐ N/A – No seat height adjustment. Go to 1.18
- ☒ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ☒ 1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ☒ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ☒ 1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ☒ 1.18. Is the seat a bucket seat?  
☒ Yes, go to 1.19 and skip 1.20  
☐ No, go to 1.20 and skip 1.19
- ☒ 1.19 Bucket seats:  
Locate and **mark** for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)

- ☐ 1.20 Bench seats (complete ONLY the one that is applicable to the seat being marked):  
Locate and **mark** for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.

## 2. Head Restraint Position

- ☐ N/A Vehicle contains automatic head restraints.  
☐ N/A, there is no head restraint adjustment Go to 3
- ☒ 2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6, S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ☒ 2.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible.  
**Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ☒ 2.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)  
Vertical height of head restraint: 220 mm  
Mid-point height: 110
- ☒ 3. Is the **steering wheel** adjustable up and down and/or in and out?  
☒ Yes – go to 3.1  
☐ No – Go to 4
- ☒ 3.1. Find and **mark** for future reference each up and down position. Label three of the positions with the following: H for highest, M for mid-position (if there is no mid-position, label the next lowest adjustment position), and L for lowest.  
☐ N/A – steering wheel is not adjustable up and down
- ☒ 3.2. Find and **mark** for future references each in and out position. Label three of the Positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the next rearmost adjustment position), and R for rearmost.  
☐ N/A – steering wheel is not adjustable in and out.
- ☒ 3.3. Use the markings to position the steering controls in the mid-position or if applicable next lowest detent position. (S16.2.9)
- ☒ 4. Place the SCRP in the full rearward, mid-height position, and mid-seat cushion angle, determined in Item 1. (S16.3.2.1.1)
- ☒ 5. If the vehicle has an adjustable accelerator pedal, place it in the full forward position. (S16.3.2.2.1)  
☒ N/A accelerator pedal not adjustable
- ☒ 6. Fully recline the seat back. (S16.3.2.1.2)  
☐ N/A seat back not adjustable.
- ☒ 7. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.2.1.2)
- ☒ 8. Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion markings as determined in Item 1.19 or 1.20. (S16.3.2.1.3 and S16.3.2.1.4)

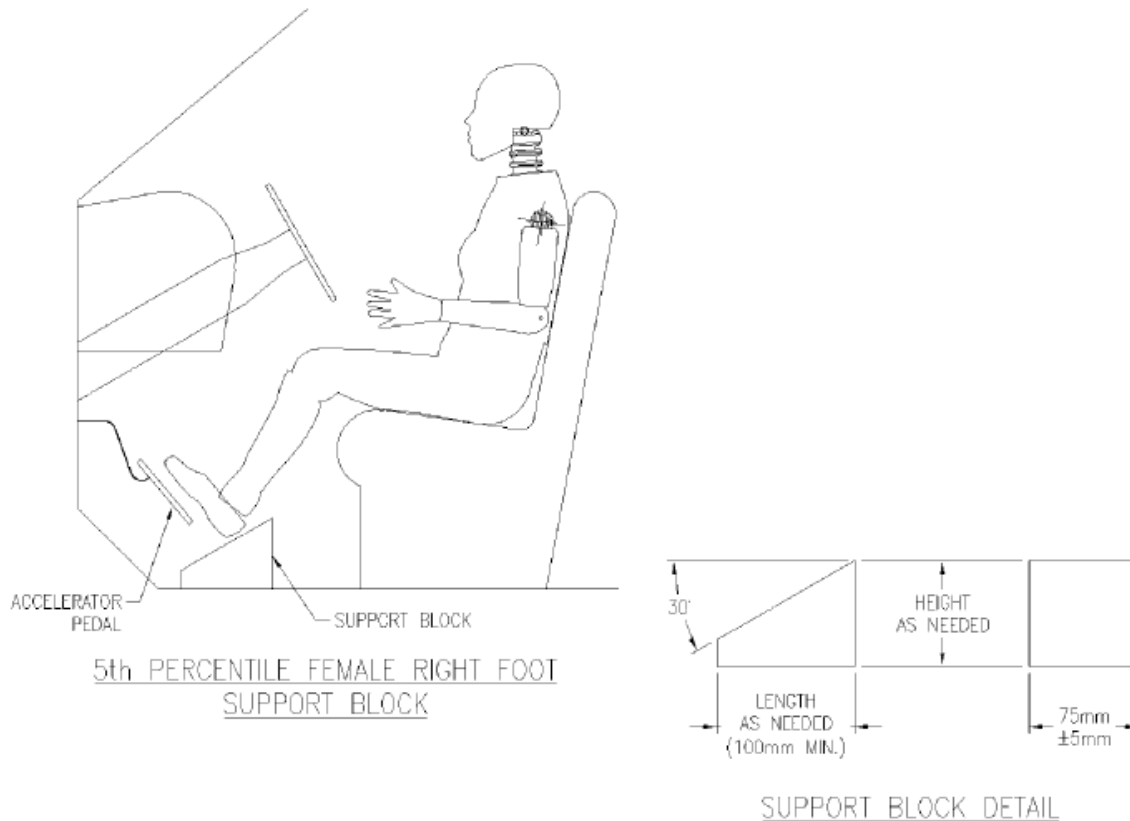
- ☒ 9. Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.2.1.5)
- ☒ 10. Set the angle between the legs and the thighs to 120 degrees. (S16.3.2.1.6)
- ☒ 11. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Center the knee separation with respect to the longitudinal seat cushion marking as determined in Item 1.19 or 1.20. (S16.3.2.1.6)  
Record Knee Separation: 165 mm
- ☒ 12. Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.2.1.6)  
☐ Pelvis contacted seat back.  
☒ Calves contacted seat cushion.
- ☒ 13. Gently rock the upper torso  $\pm 5$  degrees (approximately 51 mm (2 inches)) side-to-side three times. (S16.3.2.1.7)
- ☒ 14. If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.2.1.8)
- ☒ 15. Position the right foot until the foot is in line with a longitudinal vertical plane passing through the center of the accelerator pedal. Maintain the leg and thigh in a vertical plane. (S16.3.2.1.8)
- ☒ 16. Rotate the left leg and thigh laterally to equalize the distance between each knee and the longitudinal seat cushion marking as determined in Item 1.19 or 1.20. (S16.3.2.1.8)
- ☒ 17. Attempt to return the seat to the foremost fore-aft position, mid-height, and seat cushion mid-angle as determined in Item 1. The foot may contact and depress the accelerator and/or change the angle of the foot with respect to the leg. (S16.3.2.1.8)  
☒ Foremost position achieved. Proceed to step 22.  
☐ Foremost not achieved because of foot interference. Proceed to step 19.  
☐ Foremost not achieved because of steering wheel contact.
- ☐ 18. If either of the dummy's legs contact the steering wheel, move the steering wheel up the minimum amount required to avoid contact. If the steering wheel is not adjustable separate the knees the minimum required to avoid contact. (S16.3.2.1.8)  
☐ N/A- there was no leg contact  
☐ Steering wheel repositioned  
☐ Knees separated
- ☐ 19. If the left foot interferes with the clutch or brake pedals, rotate the left foot about the leg to provide clearance. If this is not sufficient, rotate the thigh outboard at the hip the minimum amount required for clearance. (S16.3.2.1.8)  
☐ N/A, No foot interference with pedals.  
☐ Foot adjusted to provide clearance.  
☐ Foot and Thigh adjusted to provide clearance.



- ☐ 20. Continue to move the seat. Use seat controls to line up the seat markings determined during item 1 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact. (S16.3.2.1.8)
- ☐ Foremost, mid-height position and the seat cushion mid-angle reached
- ☐ Dummy Contact. Clearance set at maximum of 5 mm  
Measured Clearance: \_\_\_\_\_
- ☐ Dummy Contact. Seat set at nearest detent position.  
Seat position: \_\_\_\_\_ detent positions rearward of foremost  
(foremost is position zero)
- ☐ 21. If the steering wheel was repositioned in step 18, return the steering wheel to the original position. If the steering wheel contacts the dummy before reaching the original position, position the wheel until a maximum clearance of 5 mm (.2 inches) is achieved, or the steering wheel is in the closest detent position that does not cause dummy contact. (S16.3.2.1.8)
- ☐ N/A Steering wheel was not repositioned.
- ☐ Original position achieved.
- ☐ Dummy Contact. Clearance set at maximum of 5 mm  
Measured Clearance: \_\_\_\_\_
- ☐ Dummy Contact. Steering wheel set at nearest detent position.  
Steering wheel position: \_\_\_\_\_ detent positions upward of original position.  
(Original position is position zero)
- ☒ 22. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level  $\pm 0.5$  degrees. If the head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.2.1.9)
- ☒ Head Level Achieved. (Check all that apply)
- ☒ Head leveled using the adjustable seat back
- ☐ Head leveled using the neck bracket.  
Head Angle: 0.1 degrees
- ☐ Head Level NOT Achieved. (Check all that apply)
- ☐ Head adjusted using the adjustable seat back
- ☐ Head adjusted using the neck bracket.  
Head Angle: \_\_\_\_\_ degrees
- ☒ 23. Verify the pelvis is not interfering with the seat bight. (S16.3.2.1.9)
- ☒ No interference
- ☐ Pelvis moved forward the minimum amount so that it is not caught in the seat bight.
- ☒ 24. Verify the dummy abdomen is properly installed. (S16.3.2.1.9)
- ☒ Abdomen still seated properly into dummy
- ☐ Abdomen was adjusted because it was not seated properly into dummy
- ☒ 25. Head Angle
- ☒ N/A, neither the pelvis nor the abdomen were adjusted.
- ☒ 25.1 Head still level (Go to 26)

- ☐ 25.2 Head level adjusted
- ☐ Head Level Achieved. (Check all that apply)
- ☐ Head leveled using the adjustable seat back
- ☐ Head leveled using the neck bracket.
- Head Angle: \_\_\_\_\_ degrees
- ☐ Head Level NOT Achieved. (Check all that apply)
- ☐ Head level adjusted using the adjustable seat back
- ☐ Head level adjusted using the neck bracket.
- Head Angle: \_\_\_\_\_ degrees
- ☒ 26. If the dummy torso contacts the steering wheel while performing step 22, reposition the steering wheel in the following order to eliminate contact. (S16.3.2.1.9)
- ☒ N/A, No dummy torso contact with the steering wheel.
- ☐ 26.1 Adjust telescoping mechanism.
- ☐ N/A No telescoping adjustment.
- ☐ Adjustment performed (fill in appropriate change)
- Steering wheel moved \_\_\_\_\_ detent positions in the forward direction.
- Steering wheel moved \_\_\_\_\_ mm in the forward direction.
- ☐ 26.2 Adjust tilt mechanism.
- ☐ N/A No tilt adjustment.
- ☐ No adjustment performed.
- ☐ Adjustment performed. (circle one)
- Steering wheel moved \_\_\_\_\_ detent positions Upward/Downward.
- Steering wheel moved \_\_\_\_\_ degrees Upward/Downward
- ☐ 26.3 Adjust Seat in the aft direction.
- ☐ No Adjustment performed.
- ☐ Seat moved aft \_\_\_\_\_ mm from original position.
- ☐ Seat moved aft \_\_\_\_\_ detent positions from the original position.
- ☒ 27. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees  $\pm$  2.5 degrees. If the pelvic angle cannot be set to the specified range because the head will not be level or because the dummy will have need major repositioning, adjust the pelvis as closely as possible to the angle range, but keep the head level. (S16.3.2.1.11)
- ☒ Pelvic angle set to 20.0 degrees  $\pm$  2.5 degrees.
- ☐ Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.
- ☒ Record the pelvic angle: 21.9 degrees
- ☒ 28. Check the dummy for contact with the interior after completing adjustments. (S16.3.2.1.12)
- ☒ No contact.
- ☐ Dummy in contact with interior.
- ☐ Seat moved aft \_\_\_\_\_ mm from the previous position.
- ☐ Seat moved aft \_\_\_\_\_ detent positions from the previous position.
- ☒ 29. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.2.1.12)
- ☒ N/A, Seat already at foremost position.
- ☐ Clearance unchanged. No adjustments required.
- ☐ Additional clearance available
- ☐ Seat moved Forward \_\_\_\_\_ mm from the previous position.
- ☐ Seat moved Forward \_\_\_\_\_ detent positions from the previous position.

- X 30. Driver's foot positioning, right foot. Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 31 otherwise, proceed to step 32. (S16.3.2.2.1)
- X 31. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 31.6 shall be completed in all cases. (S16.3.2.2.1 (a))
- X 31.1 With the rear of the heel contacting the floor pan, move the foot forward until pedal contact occurs or the foot is at the full forward position.
- 31.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position.
- 31.3 Extend the leg, allowing the heel to lose contact with the floor until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
- 31.4 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
- 31.5 Align the centerline of the foot with the vertical-longitudinal plane passing through the center of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
- X 31.6 Record foot position
- X Pedal Contact achieved. Contact occurred at step   31.1  .
- X Heel contacts floor pan
- Heel set        mm from floor pan.
- Pedal Contact not achieved. Heel set        mm from the floor pan.



**FIGURE G1**

- \_\_\_32. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 32.5 shall be completed in all cases.
- \_\_\_32.1 Extend the leg until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.1 (b) & S16.3.2.2.3)
- \_\_\_32.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.1 (b) & S16.3.2.2.3)
- \_\_\_N/A No pedal adjustment
- \_\_\_32.3 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.2 & S16.3.2.2.3)
- \_\_\_32.4 Align the centerline of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
- \_\_\_32.5 Record foot position
- \_\_\_Pedal Contact achieved. Contact occurred at step \_\_\_\_\_.  
     \_\_\_Heel set \_\_\_\_\_ mm from floor pan.
- \_\_\_Pedal Contact not achieved. Heel set \_\_\_\_\_ mm from the floor pan.

X 33. Driver's foot positioning, left foot.

X 33.1 Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 33.2, otherwise position the leg as perpendicular to the thigh as possible with the foot parallel to the floor pan. (S16.2.2.6)

X 33.2 Place the foot on the toe board with the heel resting on the floor pan as close to the intersection of the floor pan and the toe board as possible. Adjust the angle of the foot if necessary to contact the toe board. If the foot will not contact the toe board, set the foot perpendicular to the leg, and set the heel on the floor pan as far forward as possible. Avoid contact with the brake pedal, clutch pedal, wheel well projection, and footrest. To avoid this contact use the following three manipulations in the order listed, with each subsequent option incorporating the previous, until contact is avoided: rotate the foot about the lower leg (abduction/adduction), plantar flex the foot, rotate the leg outboard about the hip. Movement should be the minimum amount necessary. If it is not possible to avoid all foot contact, give priority to avoiding brake or clutch pedal contact. (S16.2.2.4 & S16.2.2.5 & S16.2.2.7)

X No contact

   Foot rotated about the leg (abduction/adduction)

   Foot rotated about the leg, and foot plantar flexed

   Foot rotated about the leg, foot plantar flexed, and the leg rotated about the hip.

X 33.3 Record foot position.

   Heel does not contact floor pan.

   Heel on floor pan and foot on toe board.

X Heel on floor pan and foot not on toe board.

X 34. Driver arm/hand positioning.

X 34.1 Place the dummy's upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 34.2 Place the palms of the dummy in contact with the outer part of the steering wheel rim at its horizontal centerline with the thumbs over the steering wheel rim. (S16.3.2.3.2)

X 34.3 If it is not possible to position the thumbs inside the steering wheel rim at its horizontal centerline, then position them above and as close to the horizontal centerline of the steering wheel rim as possible. (S16.3.2.3.3)

X 34.4 Lightly tape the hands to the steering wheel rim so that if the hand of the test dummy is pushed upward by a force of not less than 9 N (2 lb) and not more than 22 N (5 lb), the tape releases the hand from the steering wheel rim. (S16.3.2.3.4)

X 35. Adjustable head restraints

   N/A, there is no head restraint adjustment

   35.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 36.

   35.2 Adjust each head restraint vertically so that the mid-horizontal plane determined in Item 2 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

☒ 35.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

☐ N/A midpoint position attained in previous step

☒ Headrest set at nearest detent below the head CG

☒ 35.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

☒ 36. Driver and passenger manual belt adjustment (for tests conducted with a belted dummy). (S16.3.5)

☒ N/A Dummies are unbelted for this test.

☐ 36.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer's design position for a 5th percentile adult female. (S16.3.5.1) **This information will be supplied by the COTR.**

Manufacturer's specified position: \_\_\_\_\_

Actual Position: \_\_\_\_\_

☐ 36.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

☐ 36.3 Ensure that the dummy's head remains as level as possible. (S16.3.5.3)

☐ 36.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

I certify that I have read and performed each instruction.

Signature: Keegan Atches

Date: 10/3/16

# DATA SHEET 36

## APPENDIX G

### DUMMY POSITIONING PROCEDURES FOR PASSENGER TEST DUMMY CONFORMING TO SUBPART O OF PART 572

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Keegan Strockis

NHTSA No.: C20164101  
Test Date: 10/3/16

IMPACT ANGLE:	0°					
BELTED DUMMIES (YES/NO):	NO					
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph		0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male	
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male	

     The passenger seat adjustments are controlled by the adjustments made to the driver's seat. Therefore, positioning of the passenger dummy is made simultaneously with the driver dummy. Adjustments made to the seat to position the driver will override any adjustments that would normally be made to position the passenger. (S16.2.10.3)

#### 1. Seat Position

X 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)

X N/A – No lumbar adjustment

X 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)

X N/A – No additional support adjustment

X 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)

X N/A – No adjustable leg support system

X 1.4 **Mark** a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)

X 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)

X 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)

X 1.7 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)

X N/A – No independent fore-aft seat cushion adjustment

- ☒ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)  
Maximum angle: 18.4° Nose Up  
Minimum angle: 13.5° Nose Up  
Mid-angle: 16.0° Nose Up
- ☒ 1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)  
☐ N/A – No seat height adjustment
- ☒ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ☒ 1.11 Use only the controls that primarily move the seat in the fore-aft direction to **mark** the fore-aft seat positions. **Mark** each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.
- ☒ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ☒ 1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)  
☐ N/A – No seat height adjustment. Go to 1.18
- ☒ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ☒ 1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ☒ 1.16 Use only the controls that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ☒ 1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ☒ 1.18. Is the seat a bucket seat?  
☒ Yes, go to 1.19 and skip 1.20  
☐ No, go to 1.20 and skip 1.19



X 1.19 Bucket seats:

Locate and **mark** for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)

   1.20 Bench seats:

Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1 (b), S22.2.2.3 (b), S22.2.2.4 (a), S22.2.2.5 (a), S22.2.2.6 (a), S22.2.2.7 (a), S24.2.3 (a))

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. \_\_\_\_\_

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) \_\_\_\_\_

## 2. Head Restraint Position

   N/A Vehicle contains automatic head restraints.

   N/A, there is no head restraint adjustment Go to 3

X 2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6, S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

X 2.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

X 2.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)

Vertical height of head restraint: 220 mm

Mid-point height: 110 mm

X 3. Place the SCRIP in the full rearward, mid-height position, and mid-seat cushion angle. (S16.3.3.1.1)

X 4. Fully recline the seat back. (S16.3.3.1.2)

   N/A seat back not adjustable.

X 5. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2)

X 6. Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion marking that was determined in item 1.19 or 1.20. (S16.3.3.1.3 and S16.3.3.1.4)

X 7. Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)

X 8. Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)

- ☒ 9. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches). Center the knee separation with respect to the longitudinal seat cushion marking that was determined in item 1.19 or 1.20. (S16.3.3.1.6)  
Record Knee Separation: 165 mm
- ☒ 10. Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.3.1.6)  
☒ Pelvis contacted seat back.  
☐ Calves contacted seat cushion.
- ☒ 11. Gently rock the upper torso  $\pm 5$  degrees (approximately 51 mm (2 inches)) side-to-side three times. (S16.3.3.1.7)
- ☒ 12. If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.3.1.8)
- ☒ 13. Use seat controls to line up the seat markings determined during the completion of item 1 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact. (S16.3.3.1.8)  
☒ Foremost, mid-height position and the seat cushion mid-angle reached  
☐ Dummy Contact. Clearance set at maximum of 5 mm  
Measured Clearance: \_\_\_\_\_  
☐ Dummy Contact. Seat set at nearest detent position.  
Seat position \_\_\_\_ detent positions rearward of foremost  
(foremost is position zero)
- ☒ 14. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level  $\pm 0.5$  degrees. If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, adjust the head as closely as possible to the  $\pm 0.5$  degree range. (S16.3.3.1.9 and S16.3.3.1.10)  
(Check All That Apply)  
☐ Seat back not adjustable  
☐ Seat back not independent of driver side seat back  
☒ Head Level Achieved. (Check all that apply)  
☒ Head leveled using the adjustable seat back  
☐ Head leveled using the neck bracket.  
Head Angle: 0.0 degrees  
☐ Head Level NOT Achieved. (Check all that apply)  
☐ Head adjusted using the adjustable seat back  
☐ Head adjusted using the neck bracket.  
Head Angle: \_\_\_\_\_ degrees
- ☒ 15. Verify the pelvis is not interfering with the seat bight. (S16.3.3.1.9)  
☒ No interference  
☐ Pelvis moved forward the minimum amount so that it is not caught in the seat bight.
- ☒ 16. Verify the dummy abdomen is properly installed. (S16.3.3.1.9)  
☒ Abdomen still seated properly into dummy  
☐ Abdomen was adjusted because it was not seated properly into dummy
- ☒ 17. Head Angle  
☒ N/A, neither the pelvis nor the abdomen were adjusted.

☒ 17.1 Head still level (Go to 18)

☐ 17.2 Head level adjusted

☐ Head Level Achieved. (Check all that apply)

☐ Head leveled using the adjustable seat back

☐ Head leveled using the neck bracket.

Head Angle: \_\_\_\_\_ degrees

☐ Head Level NOT Achieved. (Check all that apply)

☐ Head adjusted using the adjustable seat back

☐ Head adjusted using the neck bracket.

Head Angle: \_\_\_\_\_ degrees

☒ 18. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees  $\pm$  2.5 degrees. If the pelvic angle cannot be set to the specified range because the head will not be level or because the dummy will have need major repositioning, adjust the pelvis as closely as possible to the angle range, but keep the head level.

☒ Pelvic angle set to 20.0 degrees  $\pm$  2.5 degrees.

☐ Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.

☒ Record the pelvic angle: 18.8 degrees

☒ 19. Check the dummy for contact with the interior after completing adjustments.

☒ No Contact.

☐ Dummy in contact with interior.

☐ Seat moved aft \_\_\_\_\_ mm from the previous position.

☐ Seat moved aft \_\_\_\_\_ detent positions from the previous position.

☒ 20. Verify the transverse instrument platform of the dummy head is level  $\pm$  0.5 degrees. Use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)

☒ Head Level Achieved

Head Angle: 0.0 degrees

☐ Head Level NOT Achieved.

Head Angle: \_\_\_\_\_ degrees

☒ 21. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.3.1.12)

☐ N/A Bench Seat

☒ N/A Seat already at full forward position.

☐ Clearance unchanged. No adjustments required.

☐ Additional clearance available

☐ Seat moved Forward \_\_\_\_\_ mm from the previous position.

☐ Seat moved Forward \_\_\_\_\_ detent positions from the previous position.

☐ Seat moved Forward, Full Forward position reached.

☒ 22. Passenger foot positioning. (Indicate final position achieved) (S16.3.3.2)

☐ 22.1 Place feet flat on the toe board; OR (S16.3.3.2.1)

☒ 22.2 If the feet cannot be placed flat on the toe board, set the feet perpendicular to the lower leg, and rest the heel as far forward on the floor pan as possible; OR (S16.3.3.2.2)

☐ 22.3 If the heels do not touch the floor pan, set the legs as perpendicular to the thighs as possible and set the feet parallel to the floor pan. (S16.3.3.2.2)

☒ 23. Passenger arm/hand positioning. (S16.3.3.3)

☒ 23.1 Place the dummy's upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.3.3.1)

☒ 23.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)

☒ 23.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)

☒ 24. Adjustable head restraints (S16.3.4)

☐ N/A, there is no head restraint adjustment

☐ 24.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 25.

☐ 24.2 Adjust each head restraint vertically so that the horizontal plane determined in Item 2 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

☒ 24.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

☐ N/A midpoint position attained in previous step

☒ Headrest set at nearest detent below the head CG

☐ 24.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

☒ 25. Manual belt adjustment (for tests conducted with a belted dummy) (S16.3.5)

☒ N/A, Unbelted test

☐ 25.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer's design position for a 5th percentile adult female. **This information will be supplied by the COTR.** (S16.3.5.1)

Manufacturer's specified position: \_\_\_\_\_

Actual Position: \_\_\_\_\_

☐ 25.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

☐ 25.3 Ensure that the dummy's head remains as level as possible. (S16.3.5.3)

☐ 25.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

I certify that I have read and performed each instruction.

Signature: Keegan Straker

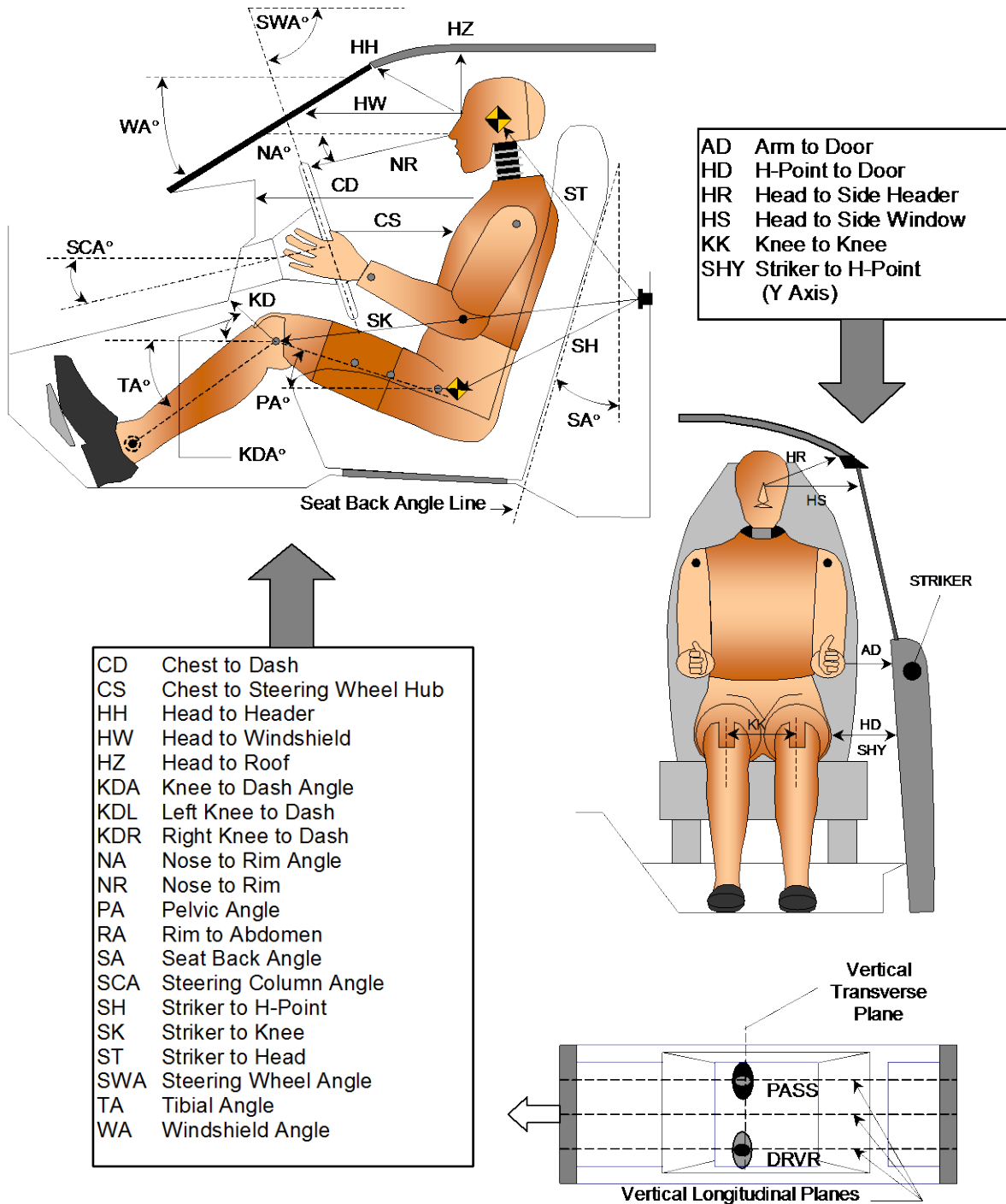
Date: 10/3/16

# **DATA SHEET 37** **DUMMY MEASUREMENTS**

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Keegan Strockis

NHTSA No.: C20164101  
 Test Date: 10/3/16

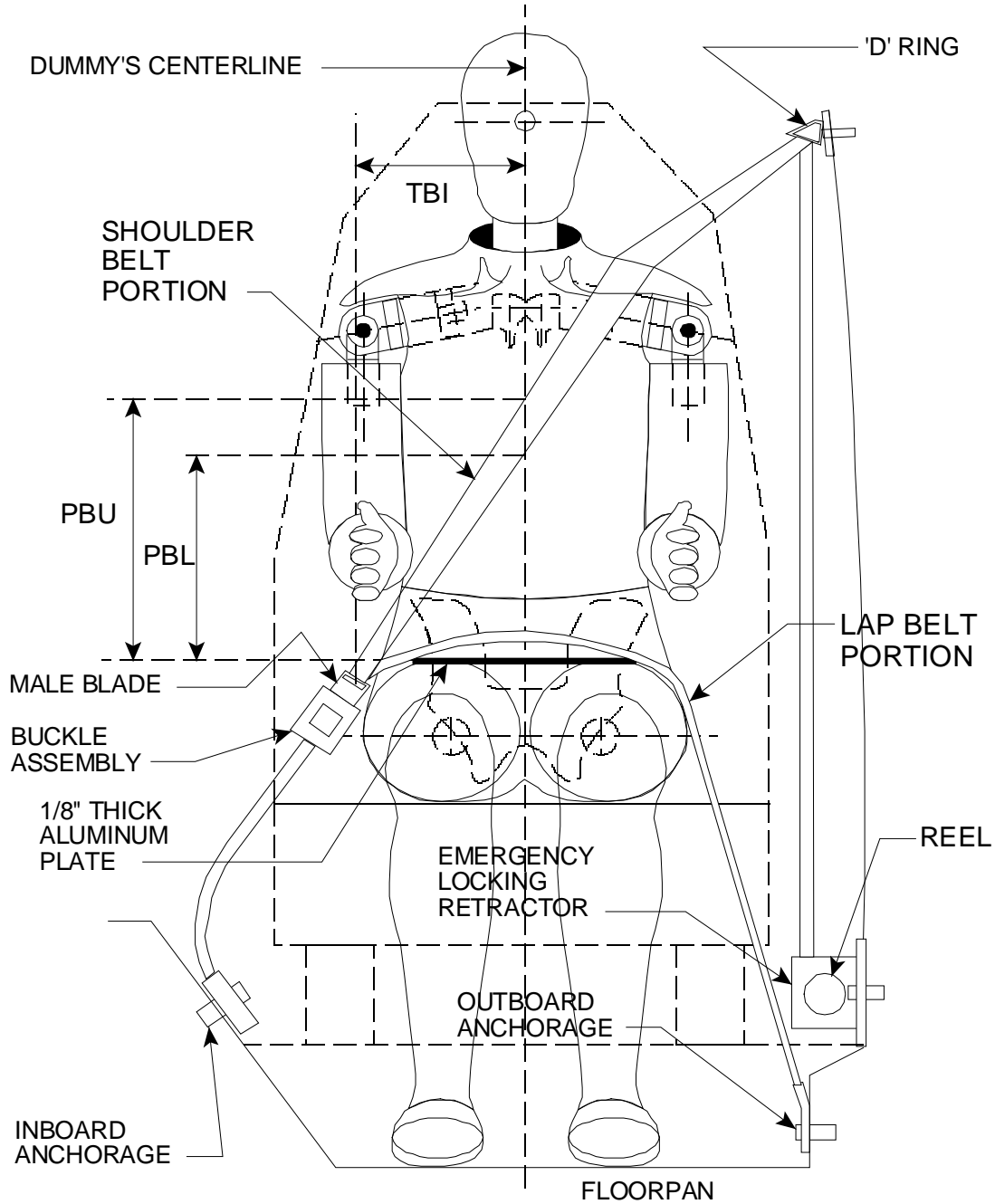
## **DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS**



### TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver SN 124		Passenger SN 125	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		28.8		
SWA	Steering Wheel Angle		72.3		
SCA	Steering Column Angle		17.7		
SA	Seat Back Angle (On Headrest Post)		3.9		4.0
HZ	Head to Roof (Z)	210		201	
HH	Head to Header	297	46.4	299	37.6
HW	Head to Windshield	596	0.0	575	0.0
HR	Head to Side Header (Y)	237		232	
NR	Nose to Rim	273	5.6		
CD	Chest to Dash	460		394	
CS	Chest to Steering Hub	219	21.2		
RA	Rim to Abdomen	127	0.0		
KDL	Left Knee to Dash	153	49.4	135	
KDR	Right Knee to Dash	136		144	41.3
PA	Pelvic Angle		21.9		18.8
TA	Tibia Angle		44.6		41.9
KK	Knee to Knee (Y)	271		230	
SK	Striker to Knee	625	103.9	632	103.7
ST	Striker to Head	370	26.6	372	31.4
SH	Striker to H-Point	377	128.2	395	128.5
SHY	Striker to H-Point (Y)	296		314	
HS	Head to Side Window	344		343	
HD	H-Point to Door (Y)	176		184	
AD	Arm to Door (Y)	82		132	
AA	Ankle to Ankle	241		169	

## SEAT BELT POSITIONING DATA



## FRONT VIEW OF DUMMY

### SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	N/A	N/A
PBL - Top surface of reference to belt lower edge	mm	N/A	N/A

# DATA SHEET 38

## CRASH TEST

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Keegan Strockis

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°			
BELTED DUMMIES (YES/NO):	NO			
TEST SPEED:	X	32 to 40 kmph		0 to 56 kmph
DRIVER DUMMY:	X	5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X	5 <sup>th</sup> female		50 <sup>th</sup> male

- ☒ 1. Vehicle underbody painted.
- ☒ 2. The speed measuring devices are in place and functioning.
- ☒ 3. The speed measuring devices are 1.0 m from the barrier (spec. 1.5 m) and 30 cm from the barrier (spec. is 30 cm).
- ☒ 4. Convertible top is in the closed position.
- ☒ 5. N/A, not a convertible.
- ☒ 5. Instrumentation and wires are placed so motion of dummies during impact is not affected.
- ☒ 6. Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car, then inflated to the tire pressure specified in the owner information.

220 kpa front left tire 220 kpa specified on tire placard or in owner information  
220 kpa front right tire 220 kpa specified on tire placard or in owner information  
220 kpa rear left tire 220 kpa specified on tire placard or in owner information  
220 kpa rear right tire 220 kpa specified on tire placard or in owner information

- ☒ 7. Time zero contacts on barrier in place.
- ☒ 8. Pre test zero and shunt calibration adjustments performed and recorded.
- ☒ 9. Dummy temperature meets requirements of section 12.2 of the test procedure.
- ☒ 10. Vehicle hood closed and latched.
- ☒ 11. Transmission placed in neutral.
- ☒ 12. Parking brake off.
- ☒ 13. Are the heads still level?
  - ☒ Yes, go to 14
  - ☐ No, Adjust dummy so that head is at the angle recorded in the Appendix F or G data sheets and then continue.
- ☒ 14. Ignition in the ON position.
- ☒ 15. Doors closed and latched but not locked.
- ☒ 16. Post test zero and shunt calibration checks performed and recorded.
- ☒ 17. Actual test speed: 39.4 kmph
- ☒ 18. Vehicle rebound from the barrier: 171 cm
- ☒ 19. Describe whether the doors open after the test and what method is used to open the doors.
  - ☒ Left Front Door: Door remained closed and latched; Door opened without tools.
  - ☒ Right Front Door: Door remained closed and latched; Door opened without tools.
  - ☒ Left Rear Door: Door remained closed and latched; Door opened without tools.
  - ☒ Right Rear Door: Door remained closed and latched; Door opened without tools.



- ☒ 20. Describe the contact points of the dummy with the interior of the vehicle.
- ☒ Driver Dummy: Head to Air Bag, Sunvisor and Headrest; Chest to Air Bag; Knees to Knee Air Bag
- ☒ Passenger Dummy: Head to Air Bag; Chest to Air Bag; Knees to Knee Air Bag

REMARKS:

Signature: Keegan Straker

Date: 10/3/16

I certify that I have read and performed each instruction.

**DATA SHEET 40**  
**ACCIDENT INVESTIGATION MEASUREMENTS**

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°					
BELTED DUMMIES (YES/NO):	NO					
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph		0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male	
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male	

Vehicle Year/Make/Model/Body Style:	2016 BMW 320i Passenger Car
VIN:	WBA8A9C50GK617082
Wheelbase:	2810 mm
Build Date:	09/15
Vehicle Size Category:	4
Test Weight:	1684.2 kg
Front Overhang:	782 mm
Overall Width:	1895 mm
Overall Length Center:	4604 mm

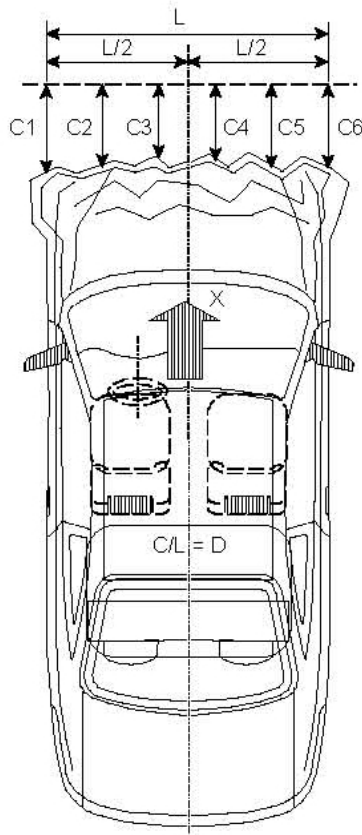
Accelerometer Data	
Location:	As per measurements on Data Sheet 33
Linearity:	>99.9%

Integration Algorithm:	Trapezoidal
Vehicle Impact Speed:	39.4 kmph
Time of Separation:	112.3 ms
Velocity Change:	43.7 kmph

## CRUSH PROFILE

Collision Deformation Classification: 12FDEW2  
 Midpoint of Damage: Vehicle Longitudinal Centerline  
 Damage Region Length (mm): 1510  
 Impact Mode: Frontal Barrier

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4434	4312	122
C2	Crush zone 2 at left side	mm	4547	4348	199
C3	Crush zone 3 at left side	mm	4590	4337	253
C4	Crush zone 4 at right side	mm	4590	4285	305
C5	Crush zone 5 at right side	mm	4547	4281	266
C6	Crush zone 6 at right side	mm	4434	4296	138



REMARKS:

Signature: *Ben Stoney*

Date: 10/3/16

I certify that I have read and performed each instruction.

**DATA SHEET 41**  
**WINDSHIELD MOUNTING (FMVSS 212)**

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

1. Pre-Crash
  - 1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.
 

Retained with glue  
Rubber trim
  - 1.2 Mark the longitudinal centerline of the windshield.
  - 1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.
  - 1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.
  - 1.5 Measure from the edge of the retainer or molding to the edge of the windshield.  
Dimension G (mm): 25 mm
2. Post Crash
  - 2.1 Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?
 

☒ No - Pass. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.

☐ Yes, go to 2.2
  - 2.2 Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.
  - 2.3 Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.
  - 2.4 Calculate and record the percent retention for the right and left side of the windshield.
  - 2.5 Is total right side percent retention less than 50%?
 

☐ Yes, Fail

☐ No, Pass
  - 2.6 Is total left side percent retention less than 50%?
 

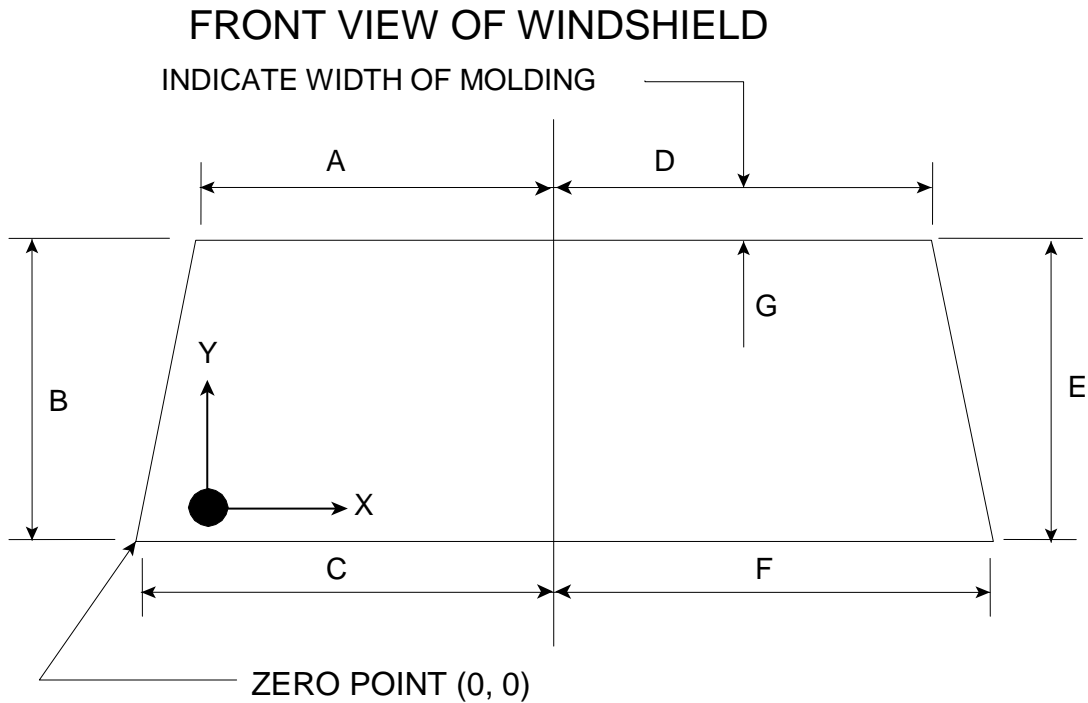
☐ Yes, Fail

☐ No, Pass

## WINDSHIELD RETENTION MEASUREMENTS

	Dimension	Pre-Crash (mm)	Post-Crash (mm)	Percent Retention (Post-Test ÷ Pre-Crash)
Left Side	A	580	580	100%
	B	705	705	100%
	C	740	740	100%
	Total	2025	2025	100%
Right Side	D	580	580	100%
	E	705	705	100%
	F	740	740	100%
	Total	2025	2025	100%

Indicate area of mounting failure: NONE



REMARKS:

Signature: Ben Stoney

Date: 10/3/16

I certify that I have read and performed each instruction.

**DATA SHEET 42**  
**WINDSHIELD ZONE INTRUSION (FMVSS 219)**

Test Vehicle: 2016 BMW 320i  
 Test Program: FMVSS 208 Compliance  
 Test Technician: Ben Storey

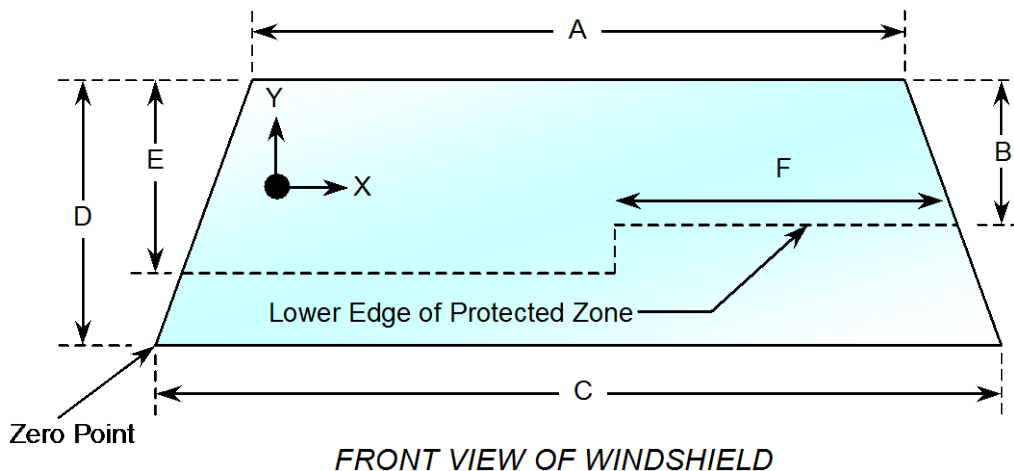
NHTSA No.: C20164101  
 Test Date: 10/3/16

IMPACT ANGLE:	0°				
BELTED DUMMIES (YES/NO):	NO				
TEST SPEED:	X	32 to 40 kmph		0 to 48 kmph	0 to 56 kmph
DRIVER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male
PASSENGER DUMMY:	X		5 <sup>th</sup> female		50 <sup>th</sup> male

This standard specifies limits for the displacement of vehicle components into the windshield area during a frontal barrier impact test at any speed up to and including 48 kmph.

- ☒ 1. Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))
- ☒ 2. Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))
- ☒ 3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(b))
- ☒ 4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.
- ☒ 5. After the crash test, record any points where a part of the exterior of the vehicle has marked, penetrated, or broken the windshield.

Provide all dimensions necessary to reproduce the protected area.



### WINDSHIELD DIMENSIONS

Item	Units	Value
A	mm	1160
B	mm	372
C	mm	1480
D	mm	705
E	mm	445
F	mm	521

#### AREA OF PROTECTED ZONE FAILURES:

- B. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one which is normally in contact with the windshield.


X	Y
NONE	

- C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component.

X	Y
NONE	

#### REMARKS:

I certify that I have read and performed each instruction.

Signature: 

Date: 10/3/16

**DATA SHEET 43**  
**FUEL SYSTEM INTEGRITY (FMVSS 301)**

Test Vehicle: 2016 BMW 320i  
Test Program: FMVSS 208 Compliance  
Test Technician: Chris Roach

NHTSA No.: C20164101  
Test Date: 10/3/16

TYPE OF IMPACT:	Frontal
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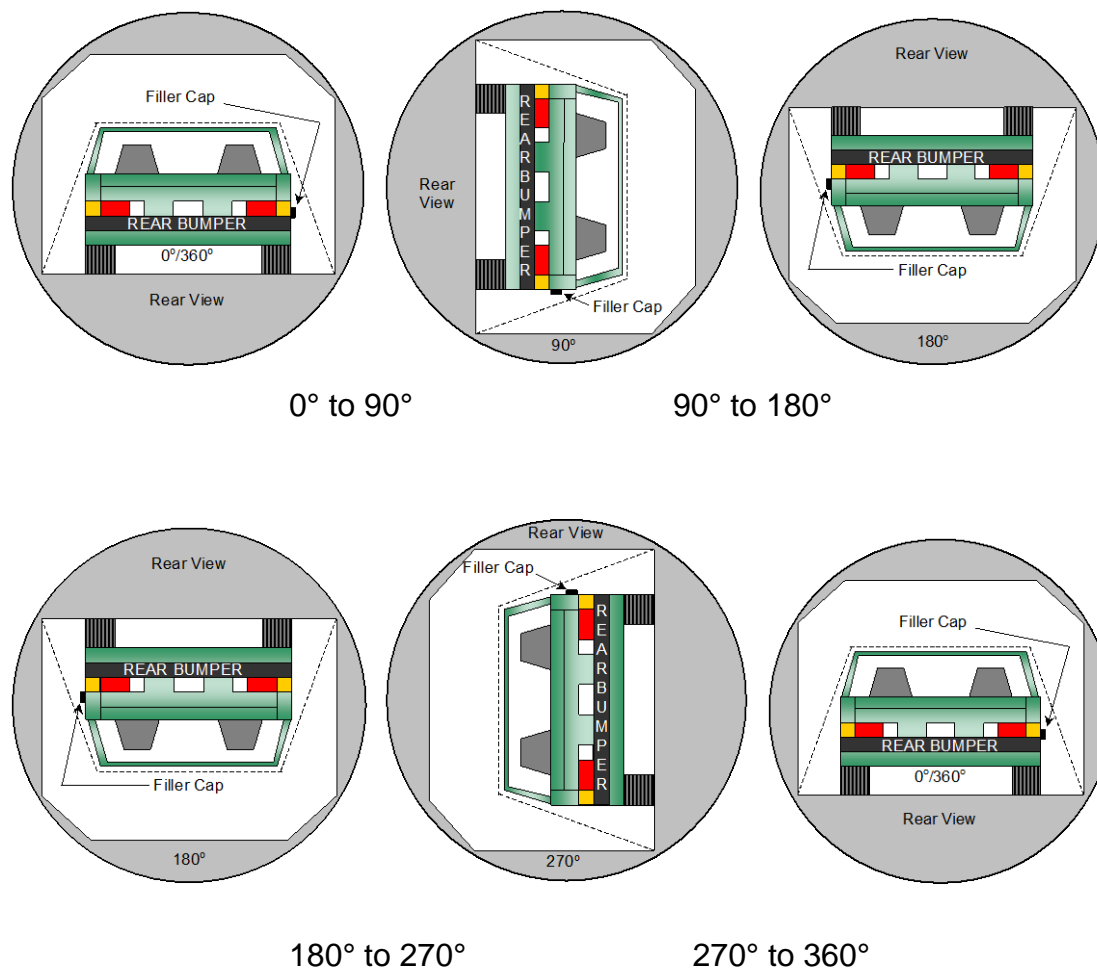
**Stoddard Solvent Spillage Measurements**

- A. From impact until vehicle motion ceases: 0.0 grams  
(Maximum Allowable = 28 grams)
- B. For the 5 minute period after motion ceases: 0.0 grams  
(Maximum Allowable = 142 grams)
- C. For the following 25 minutes: 0.0 grams  
(Maximum Allowable = 28 grams/minute)
- D. Spillage: NONE

REMARKS: NO SPILLAGE



## FMVSS 301 STATIC ROLLOVER DATA



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: **None**

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (grams)
0° to 90°	118	300	0.0
90° to 180°	114	300	0.0
180° to 270°	110	300	0.0
270° to 360°	116	300	0.0

**APPENDIX A**

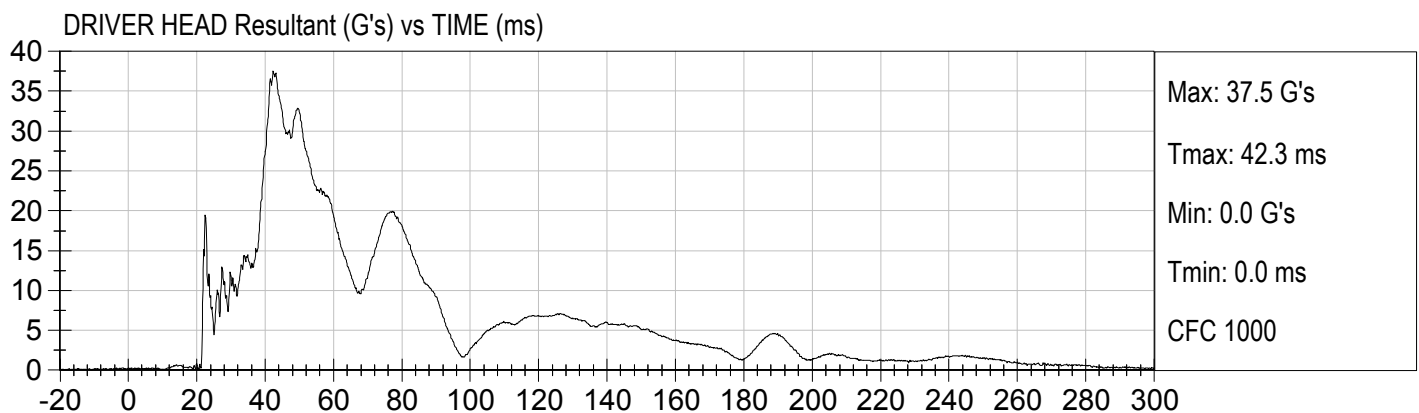
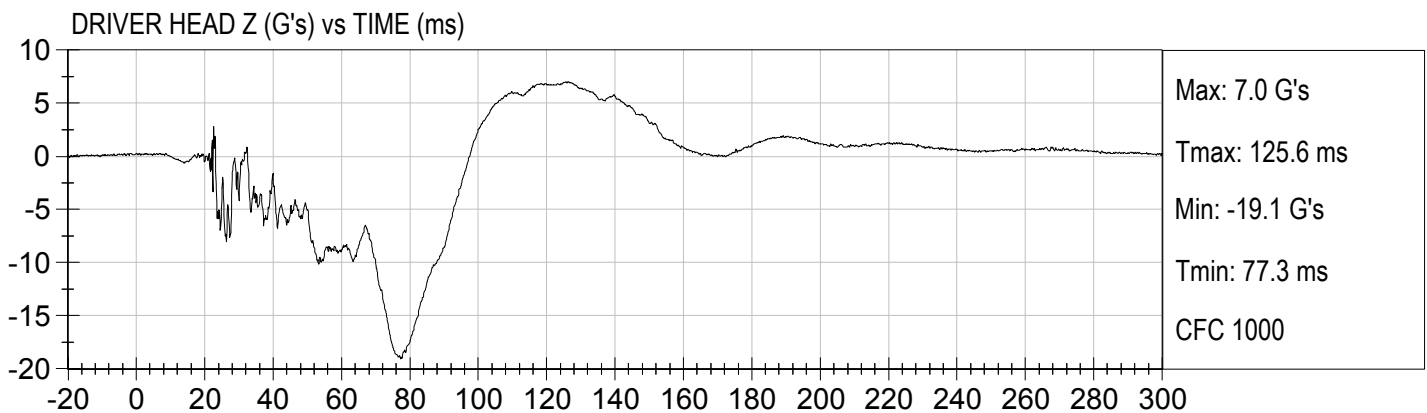
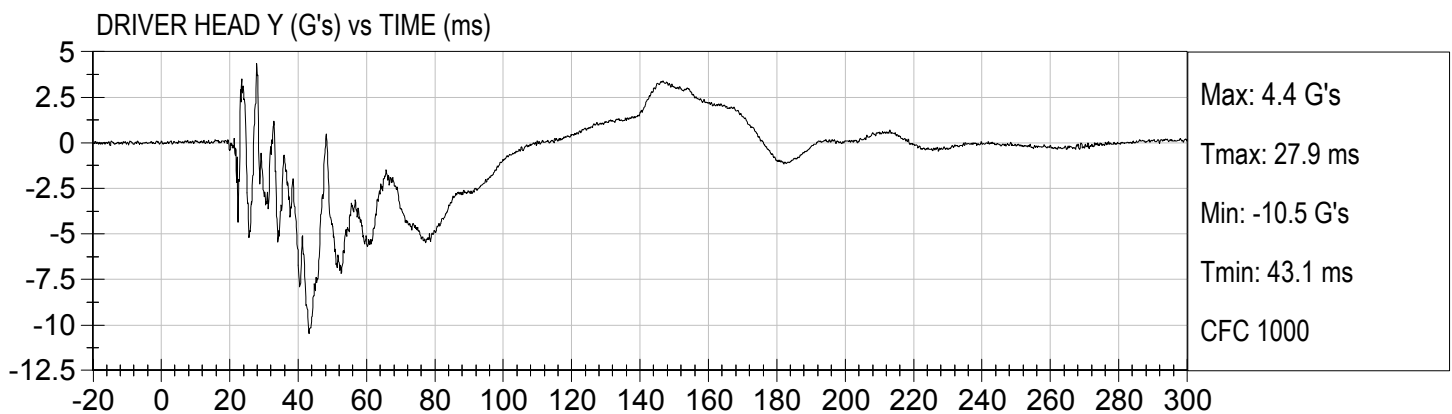
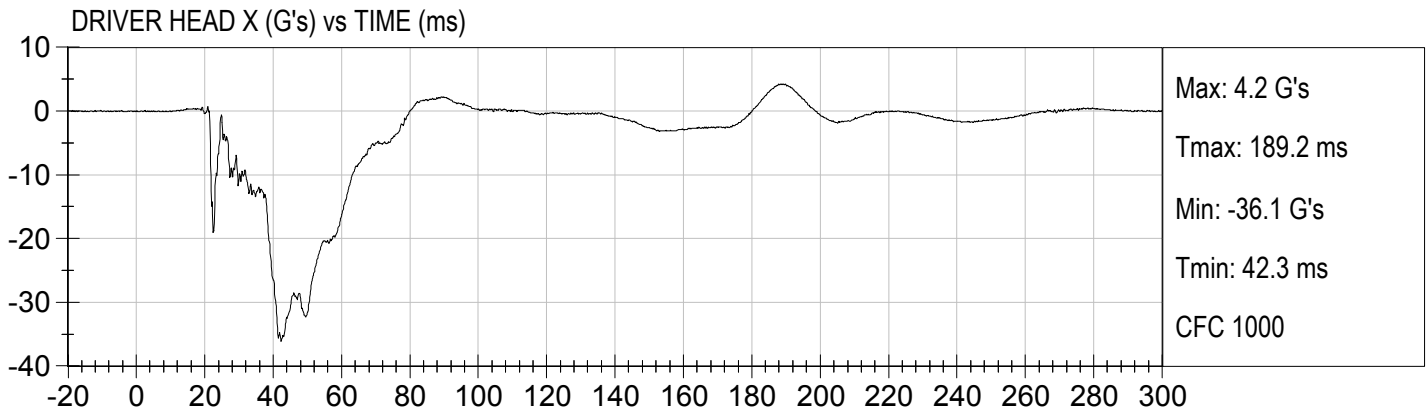
**CRASH TEST DATA**

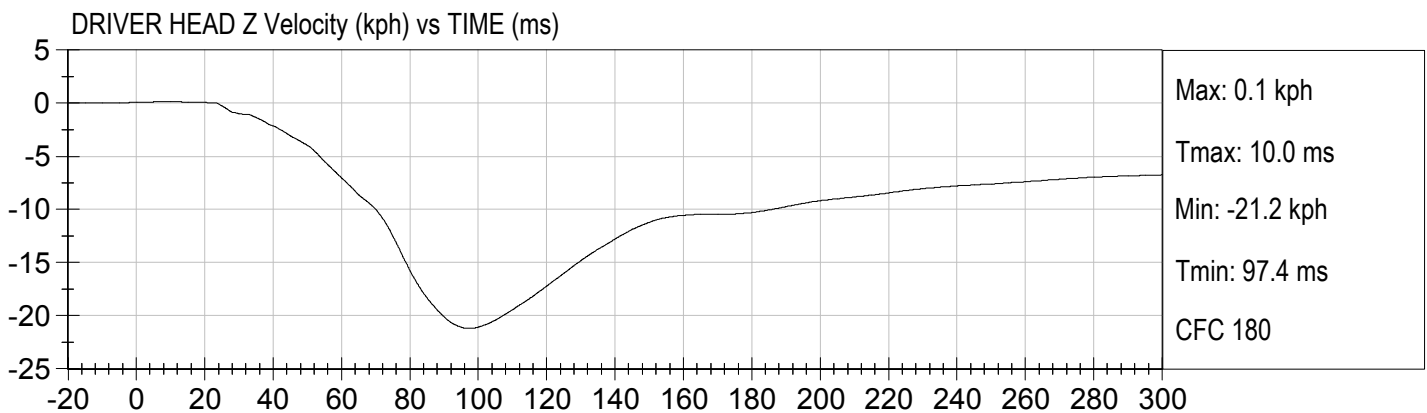
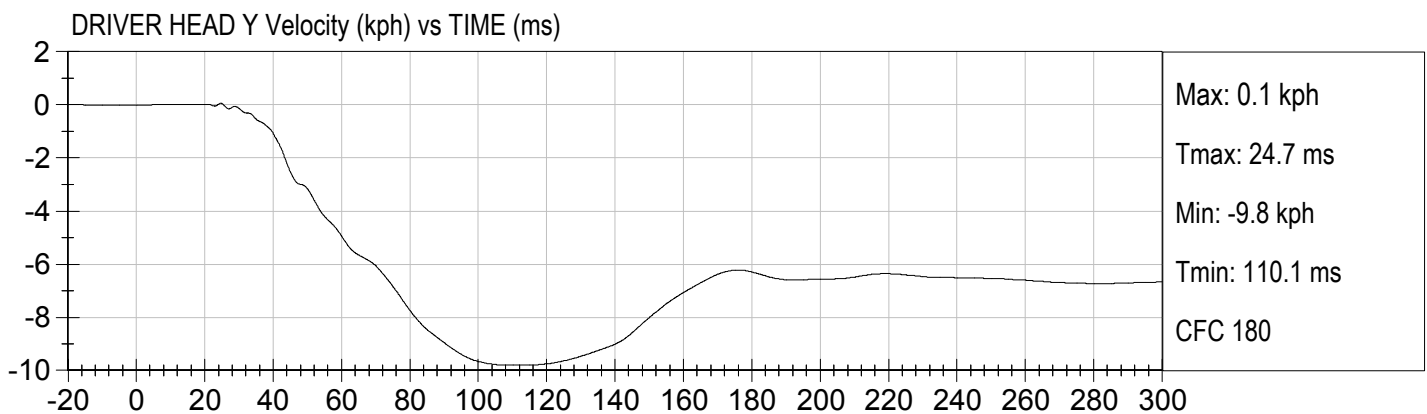
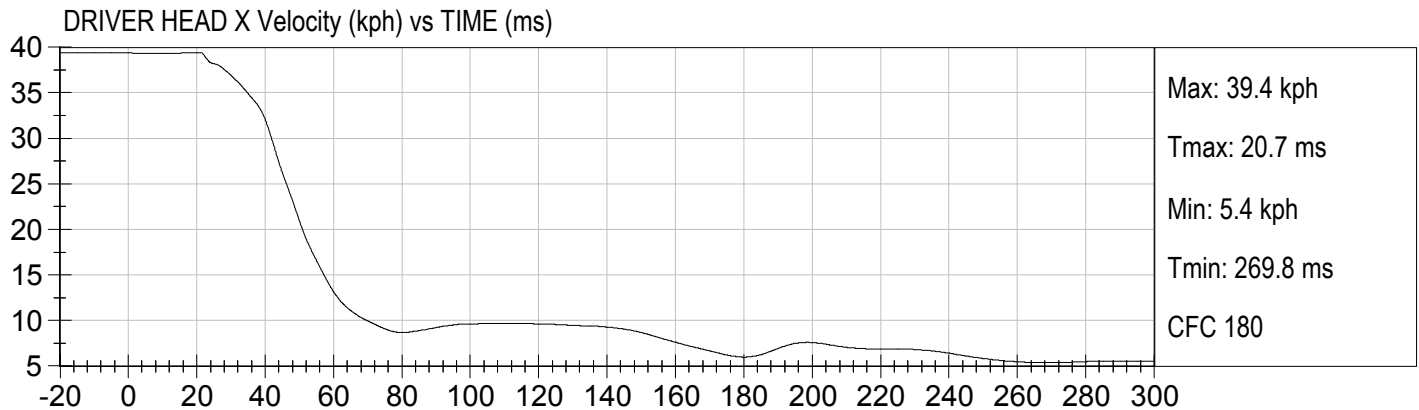
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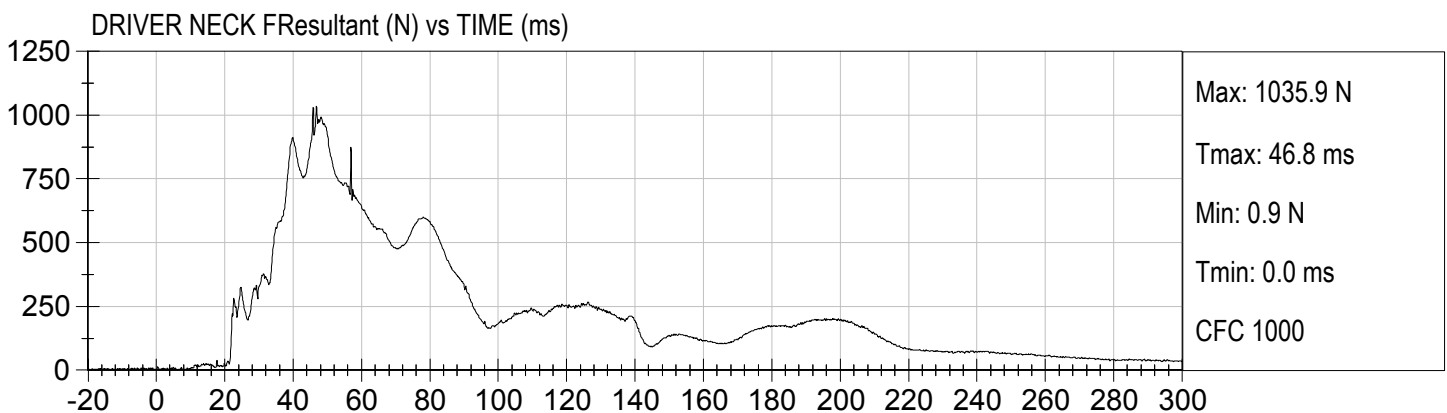
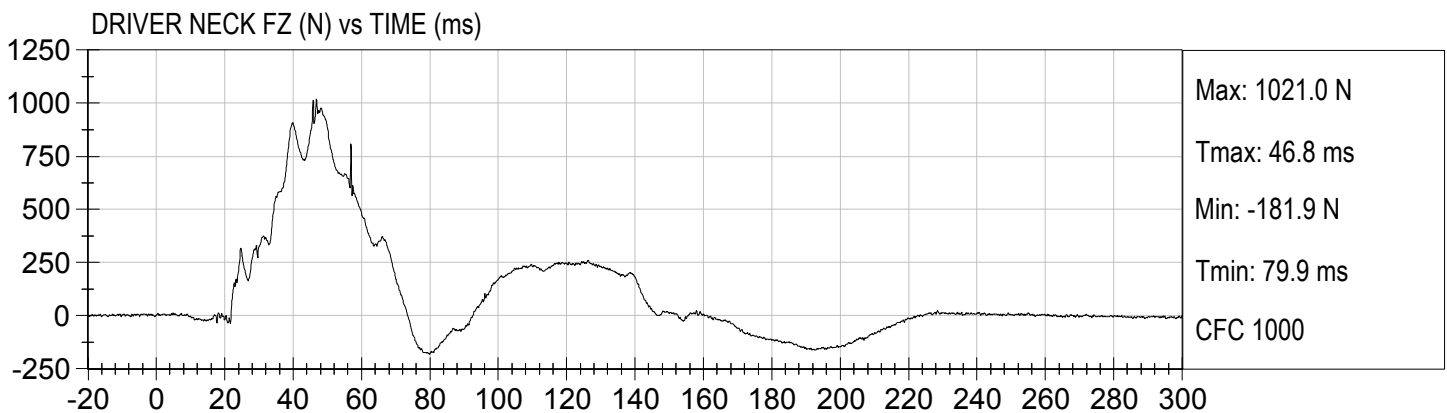
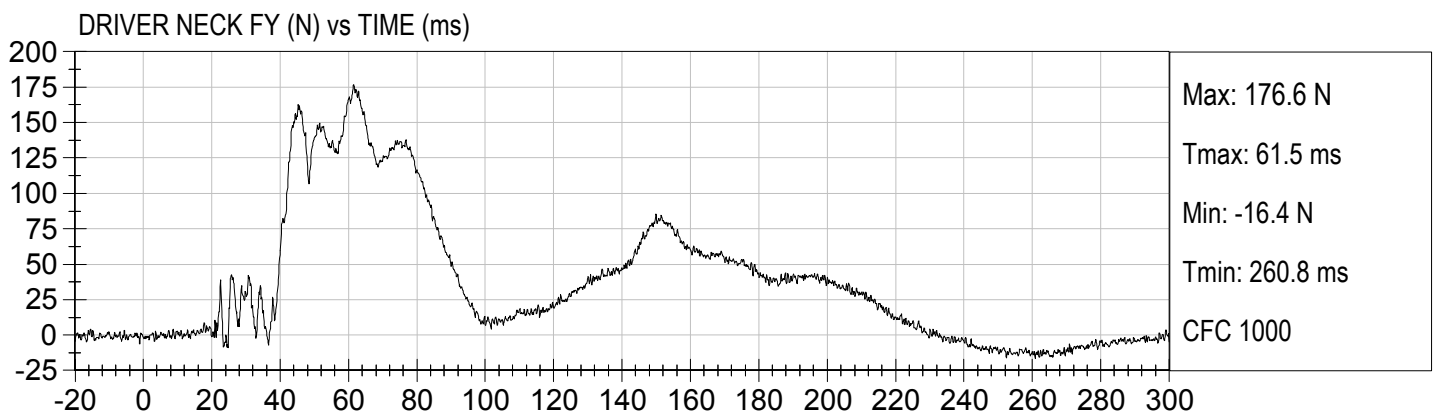
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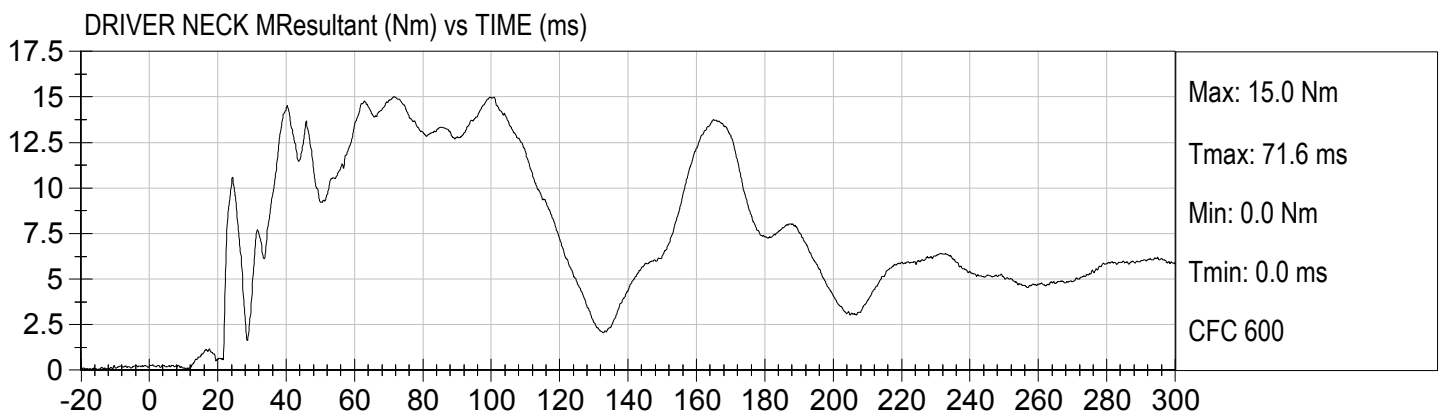
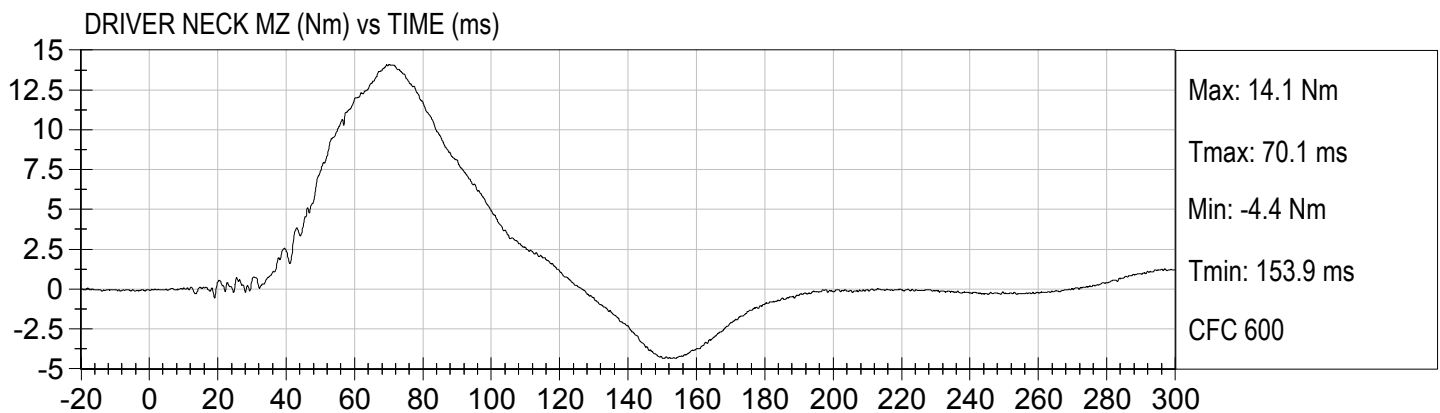
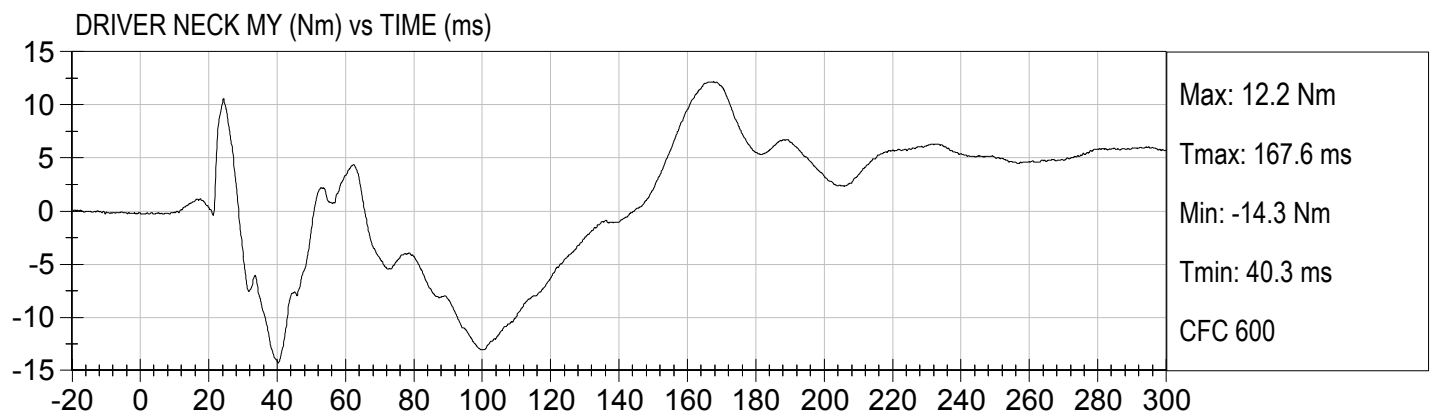
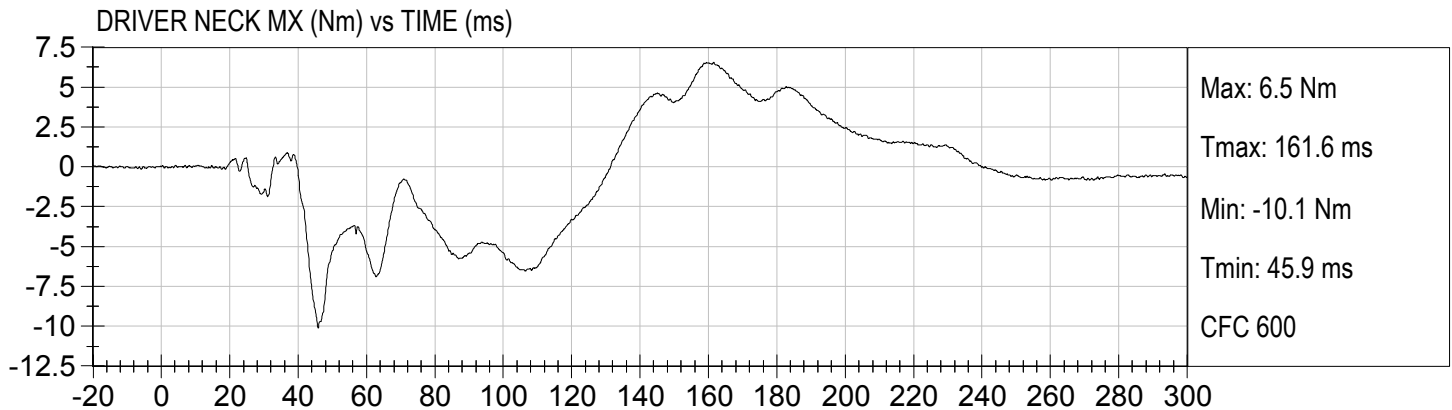
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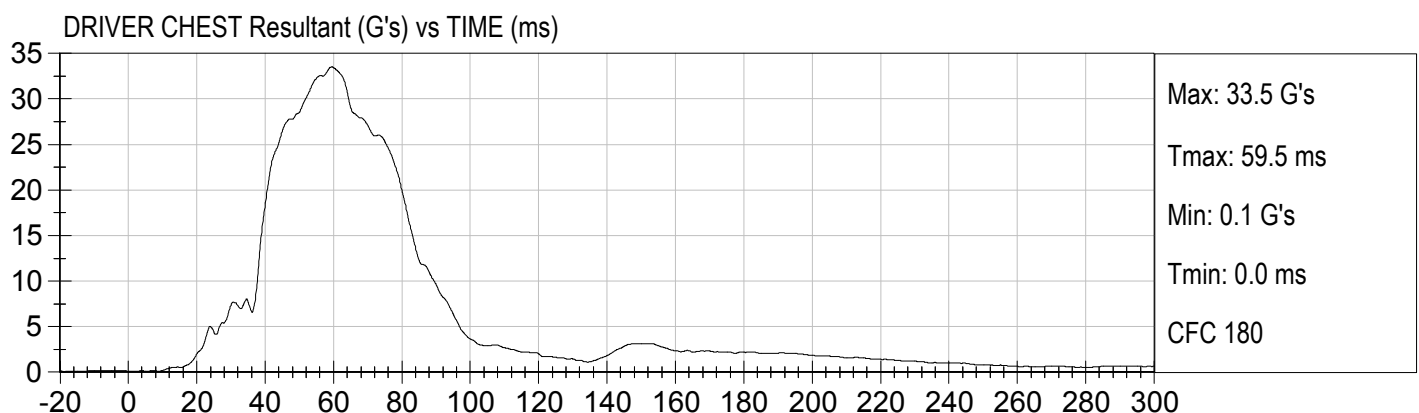
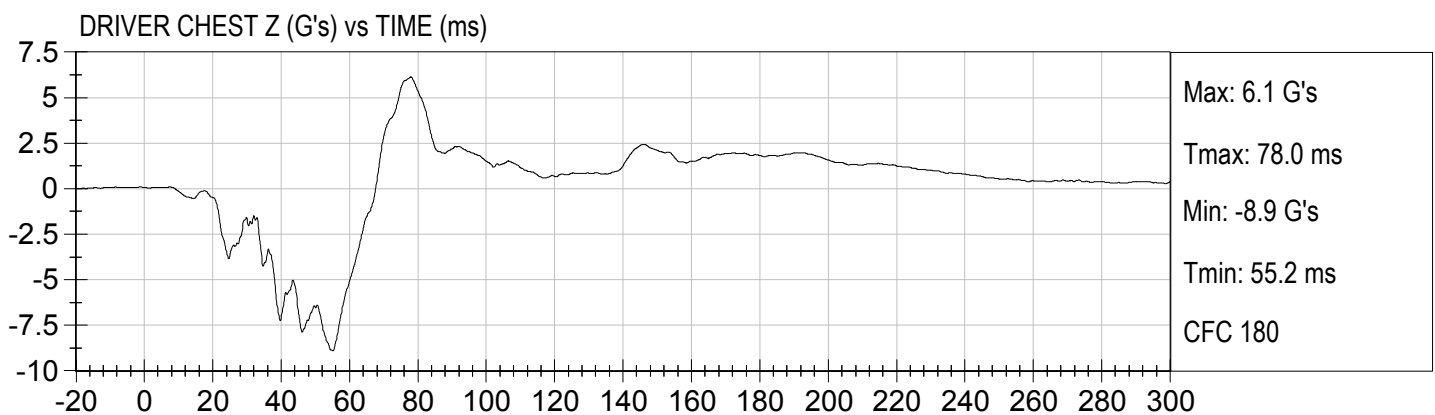
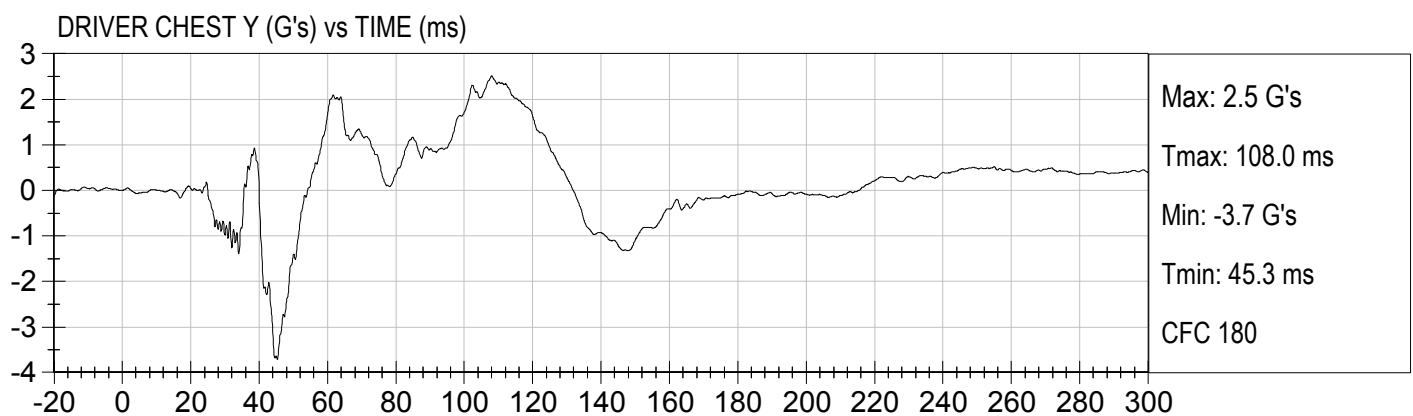
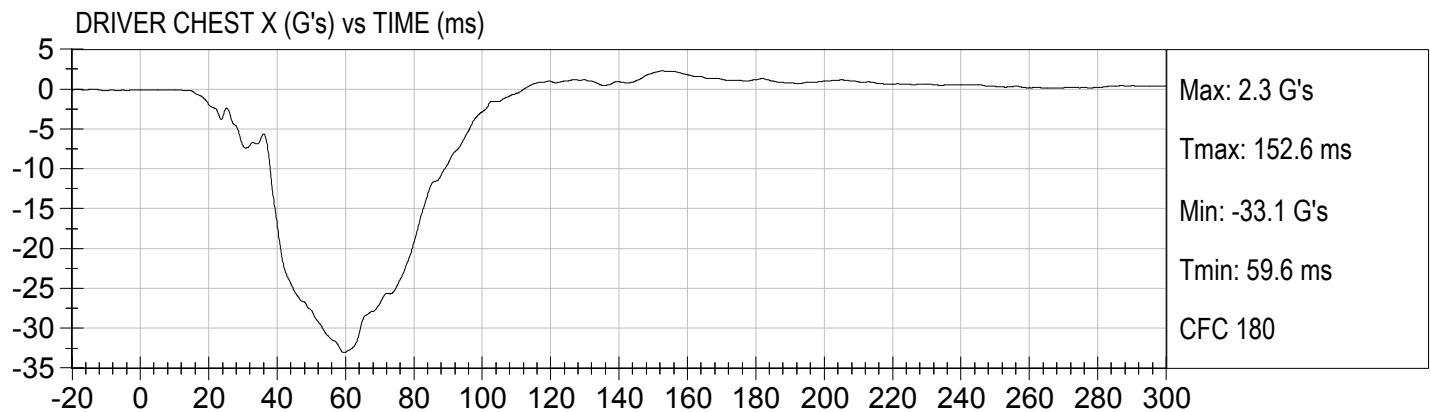


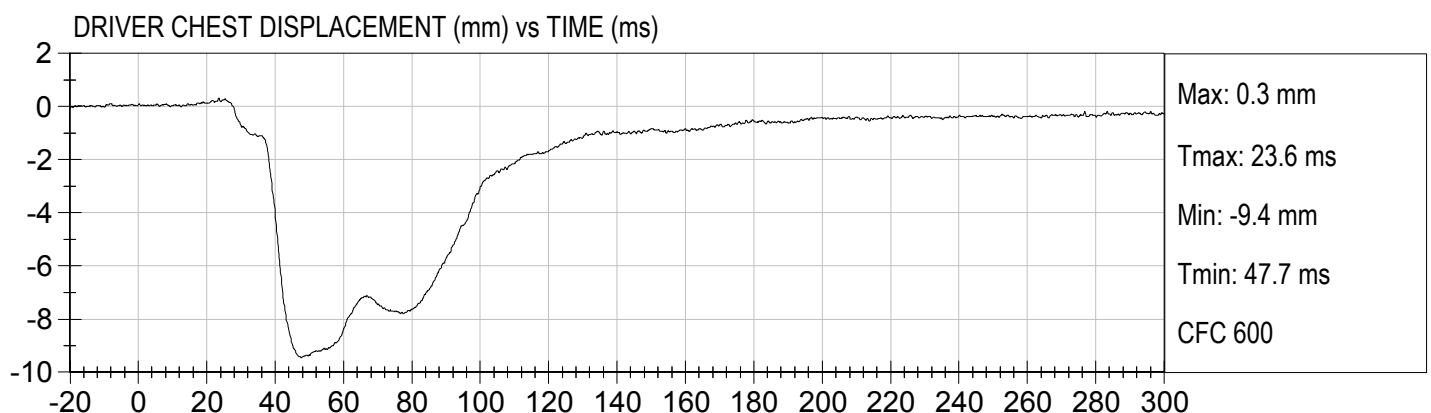
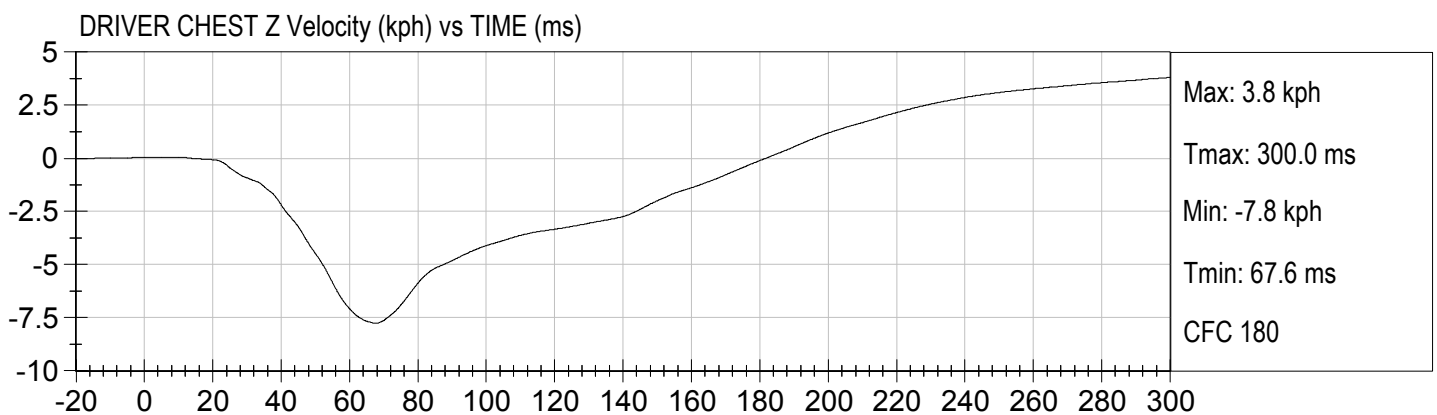
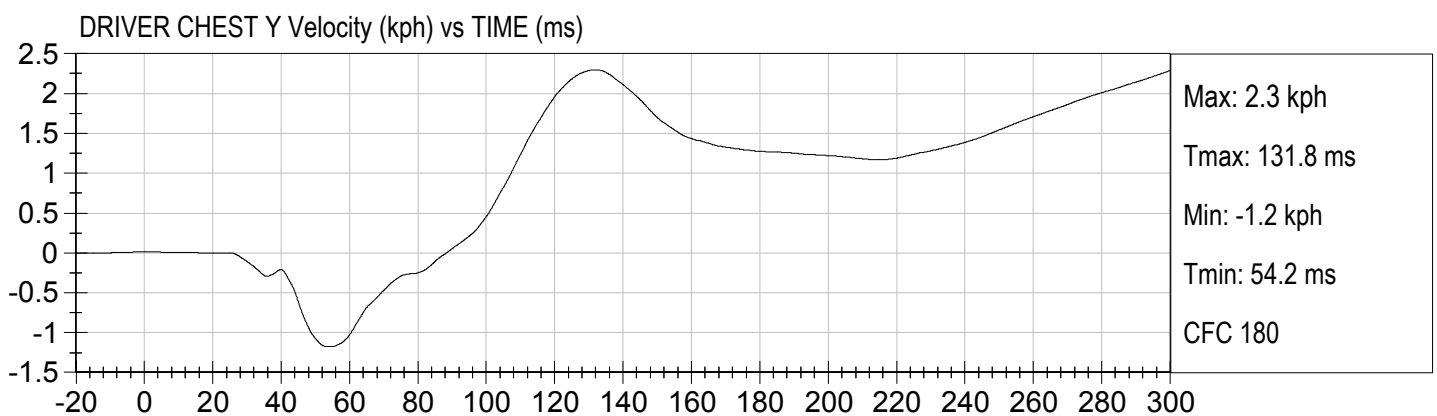
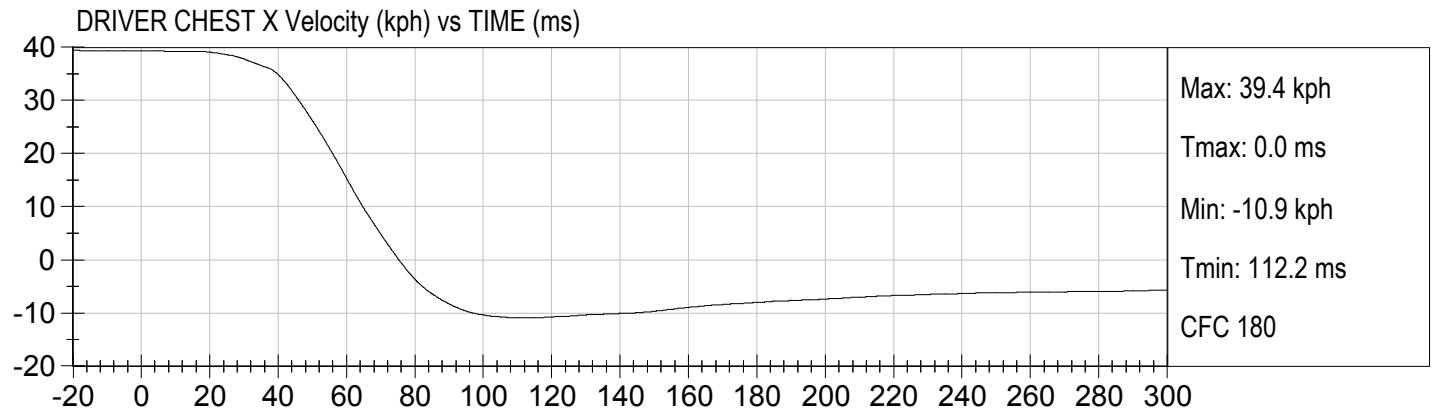


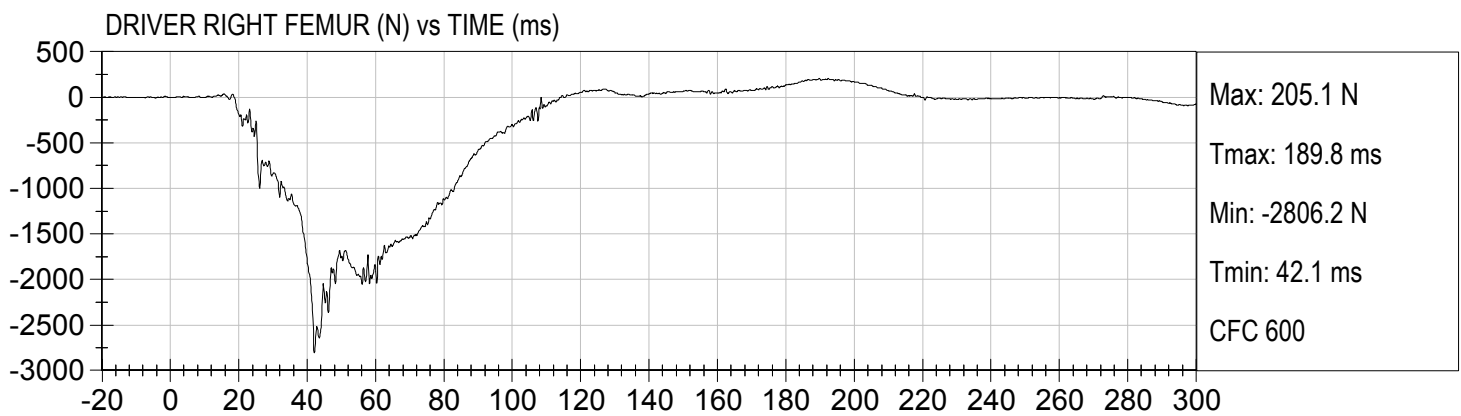
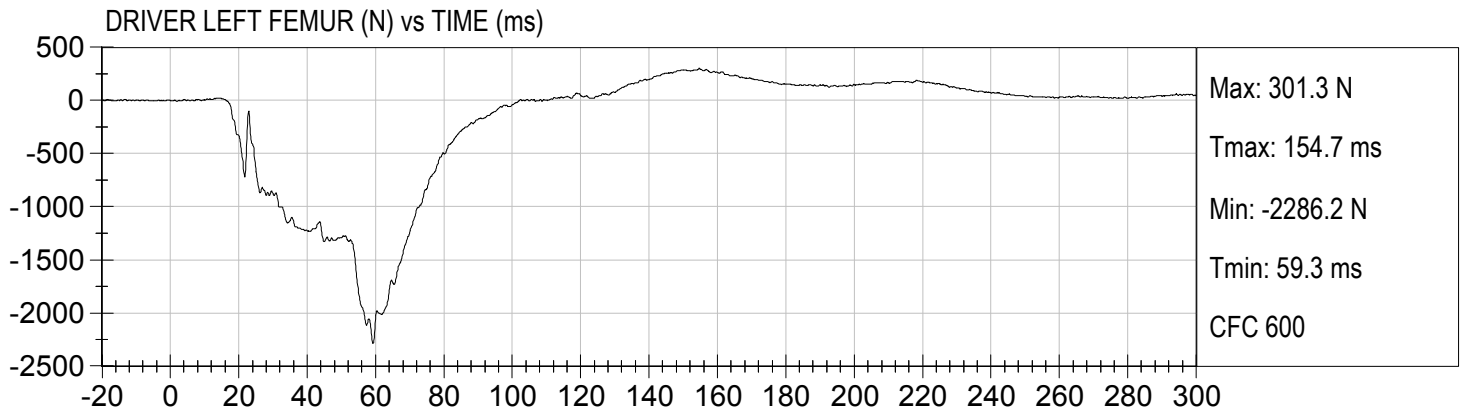


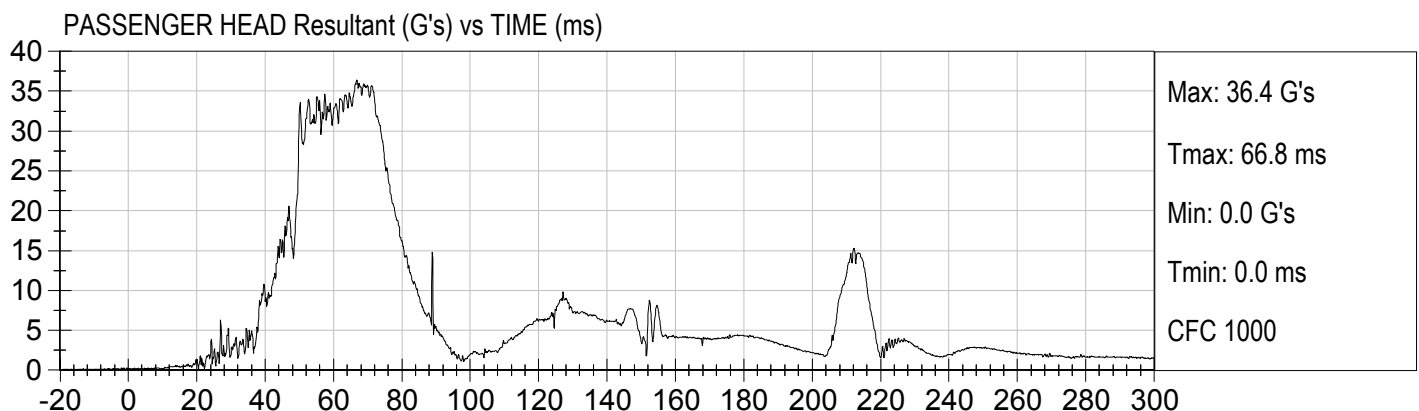
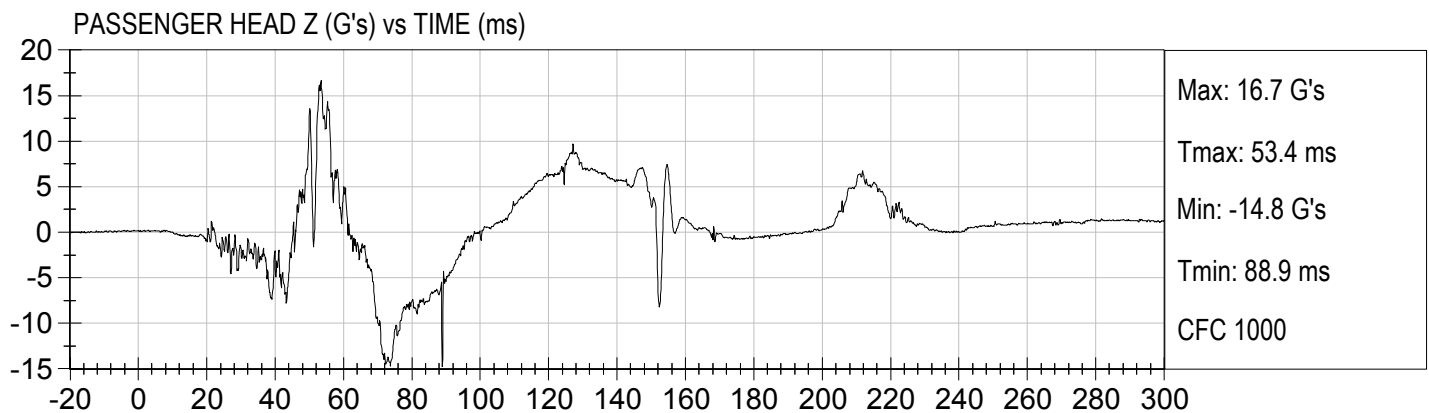
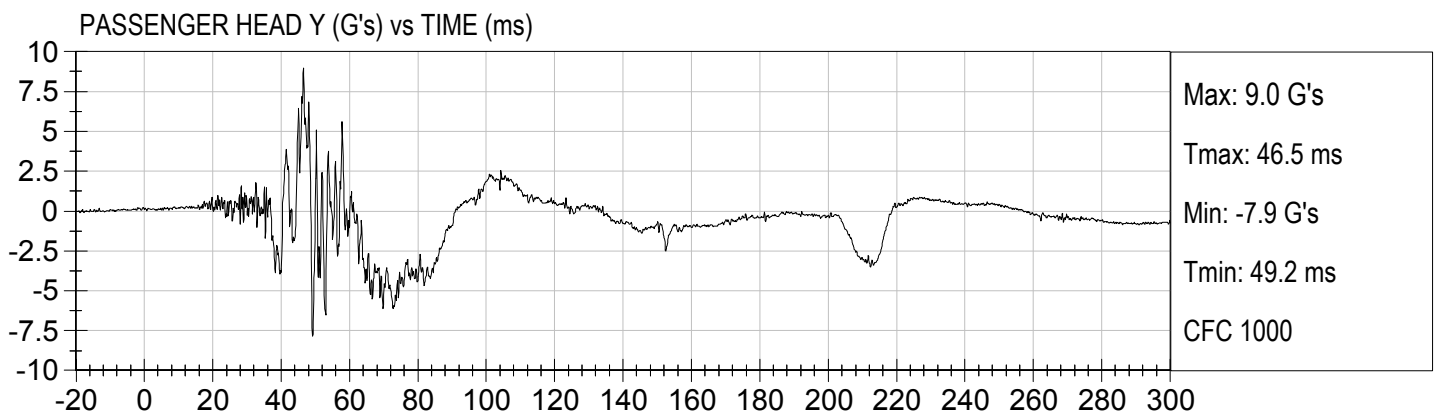
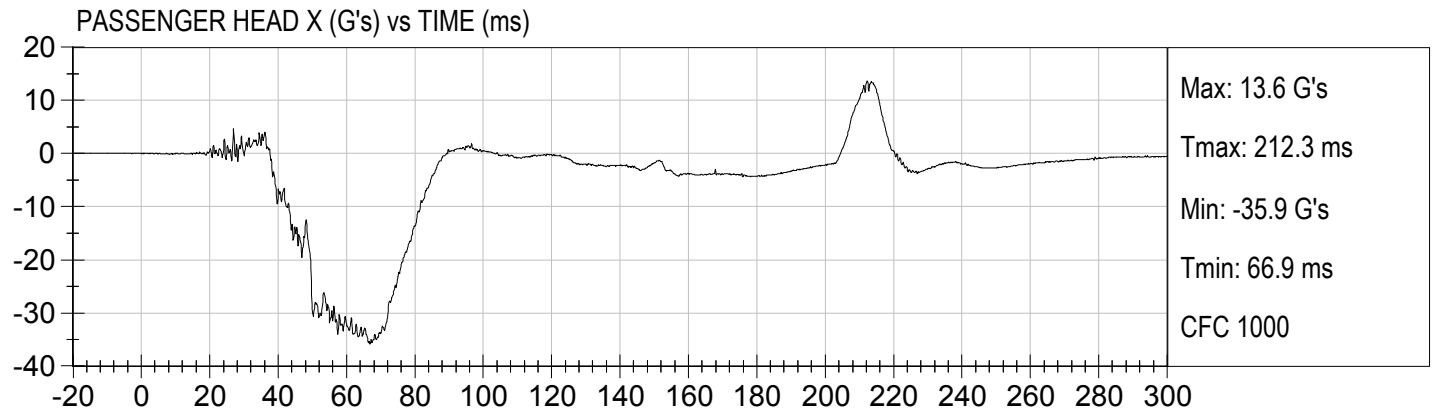


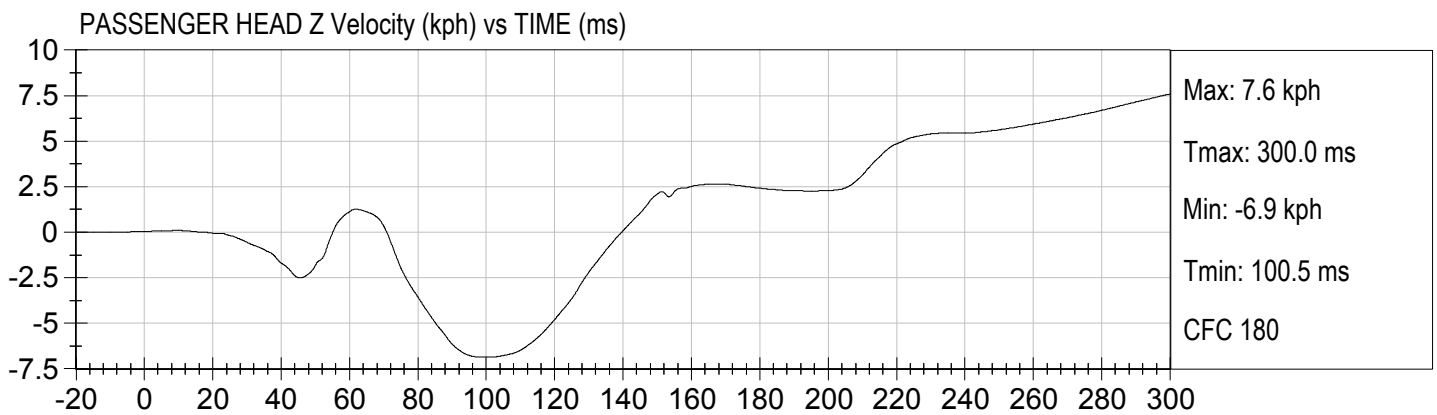
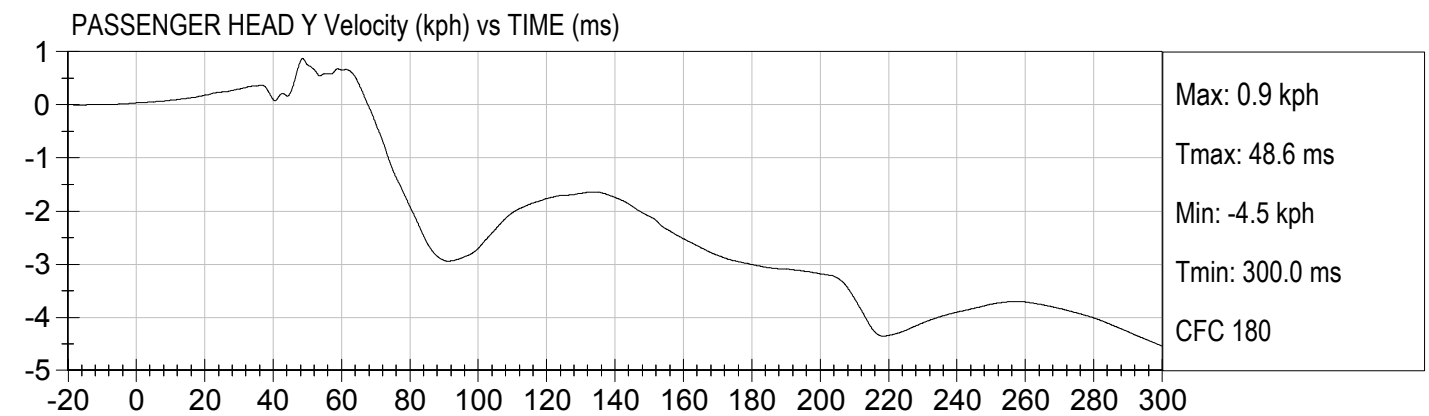
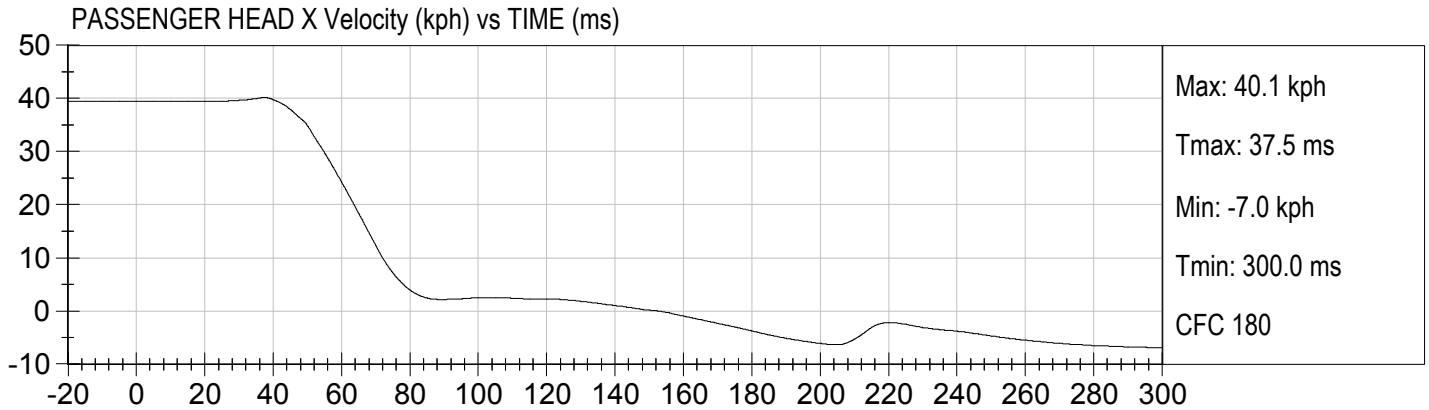


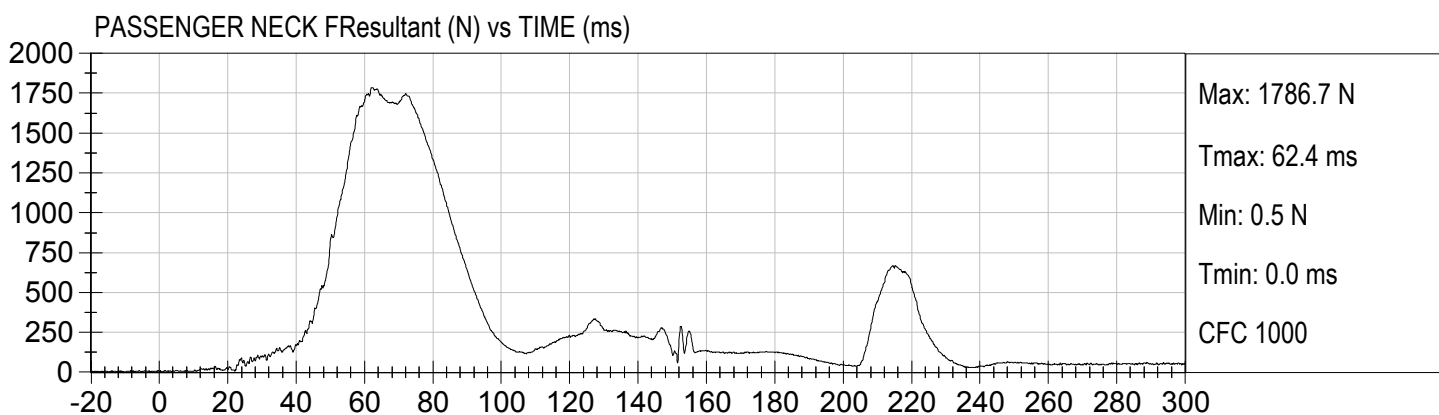
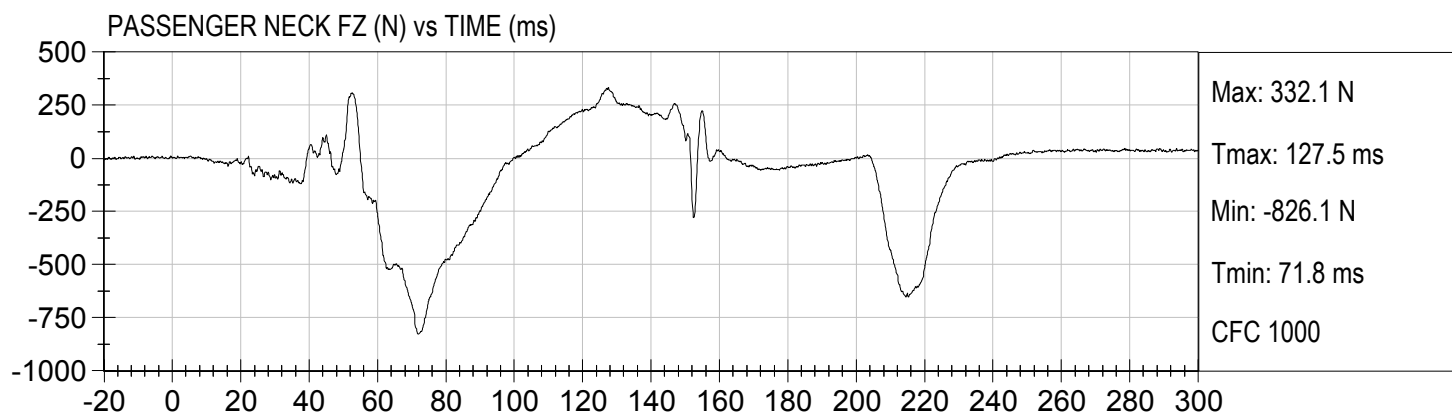
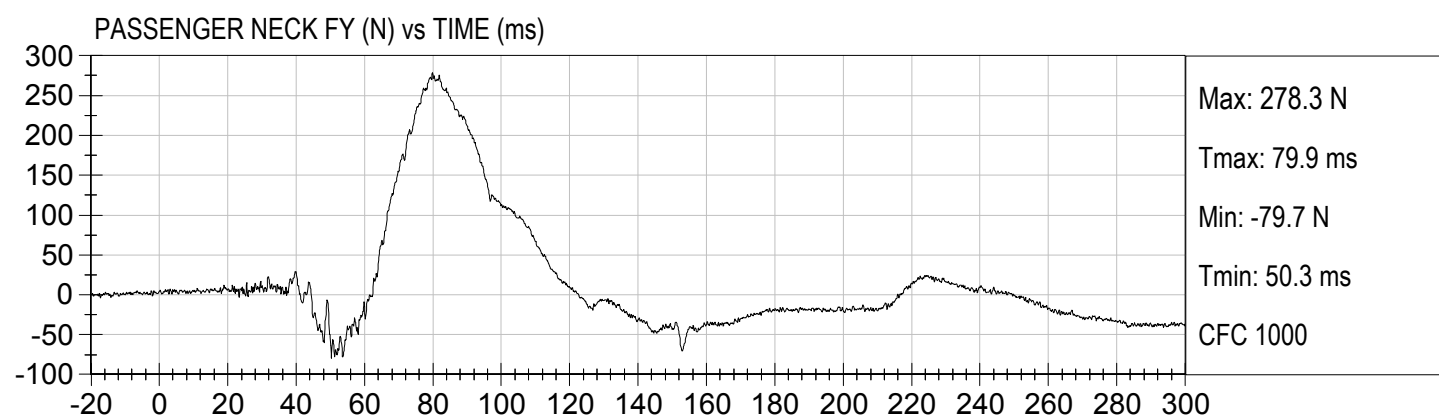
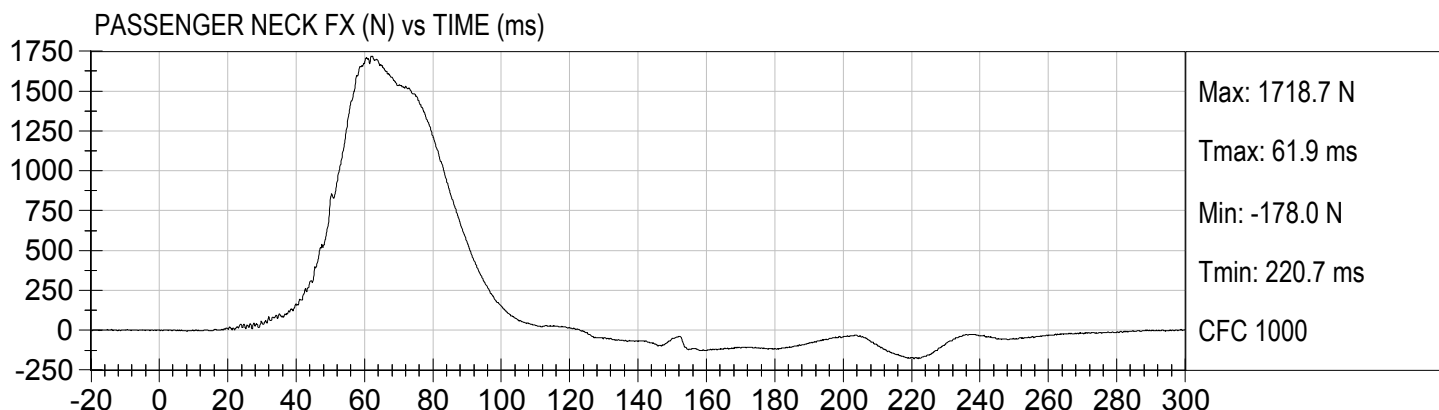


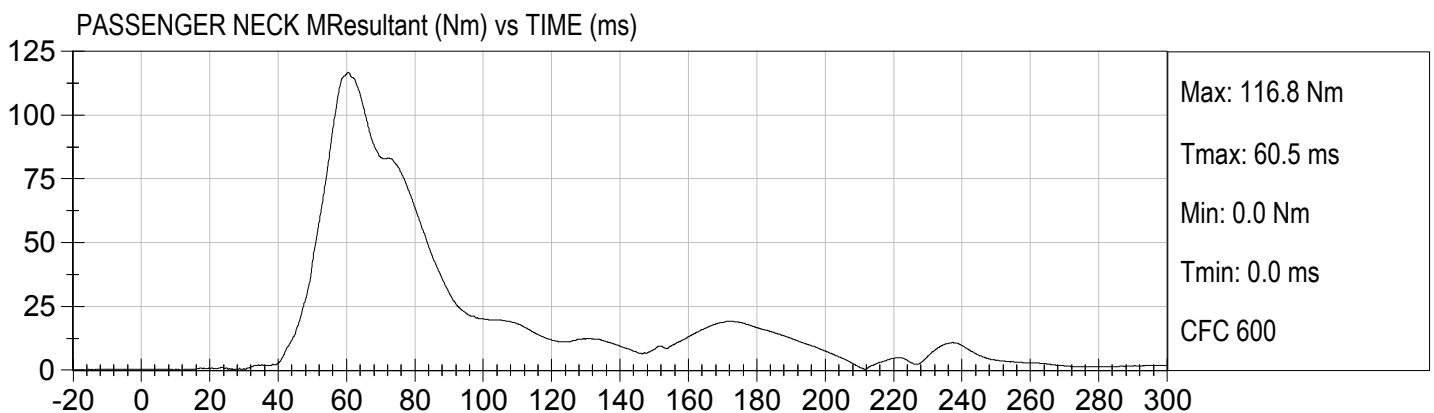
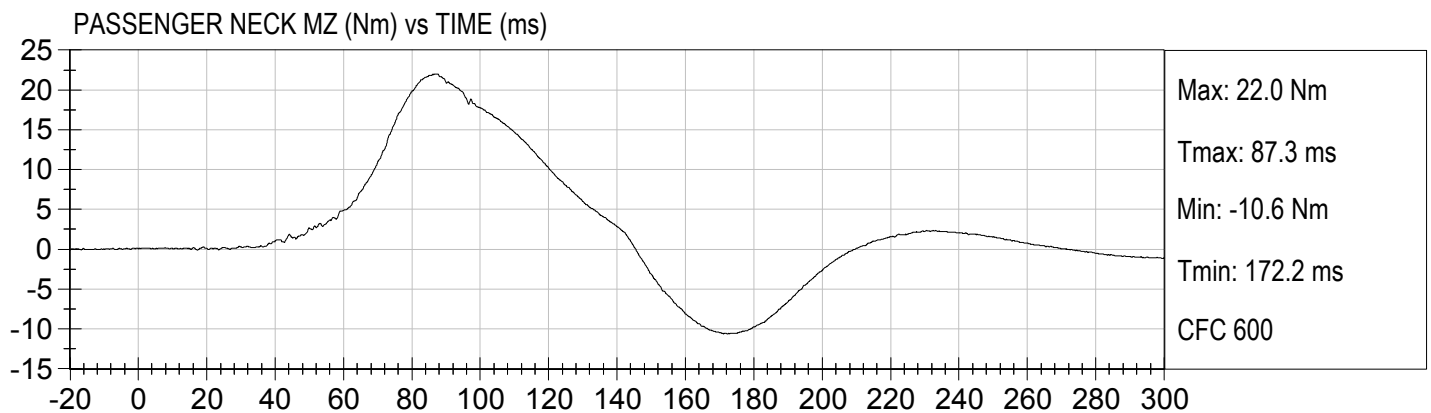
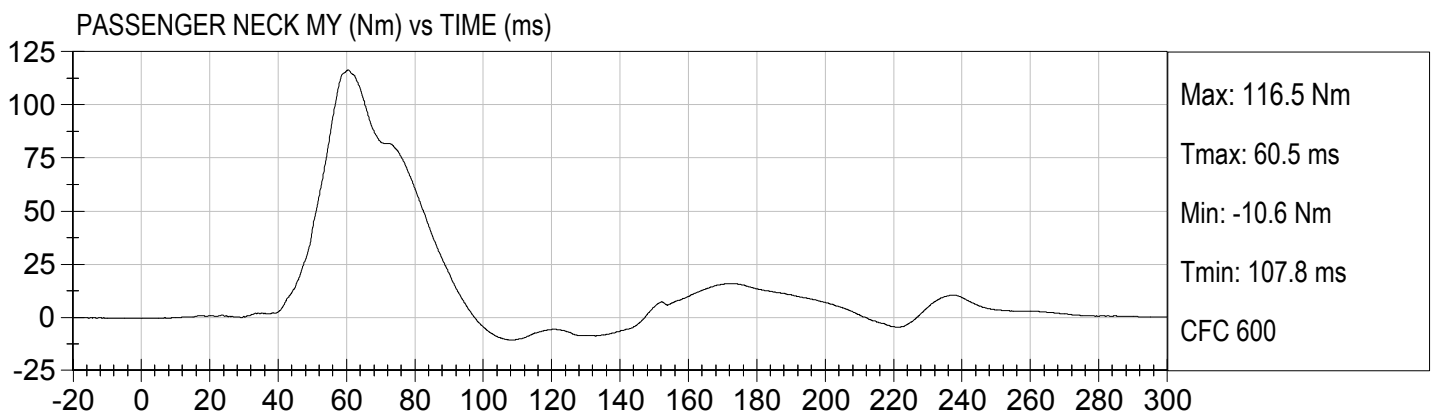
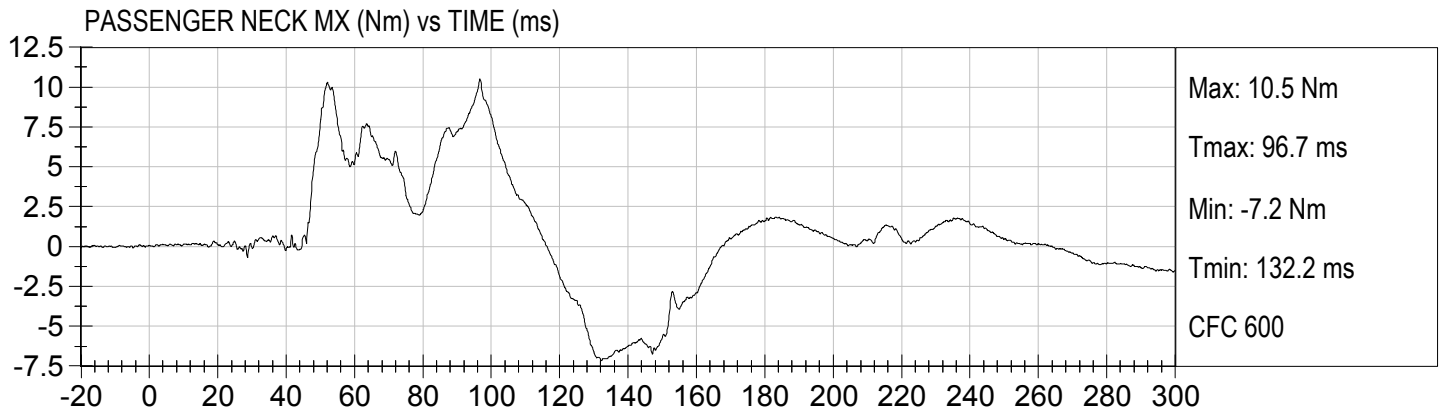


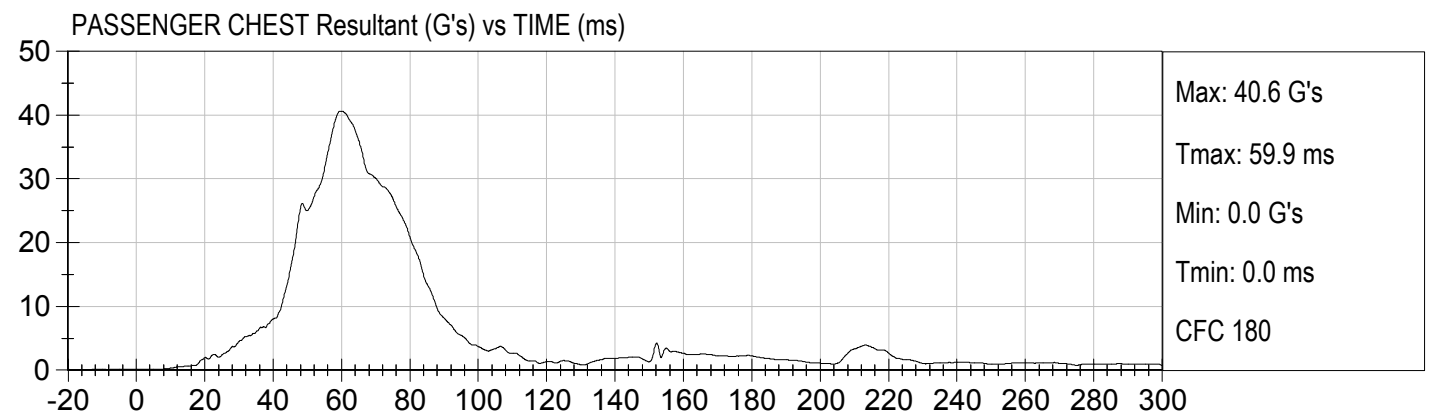
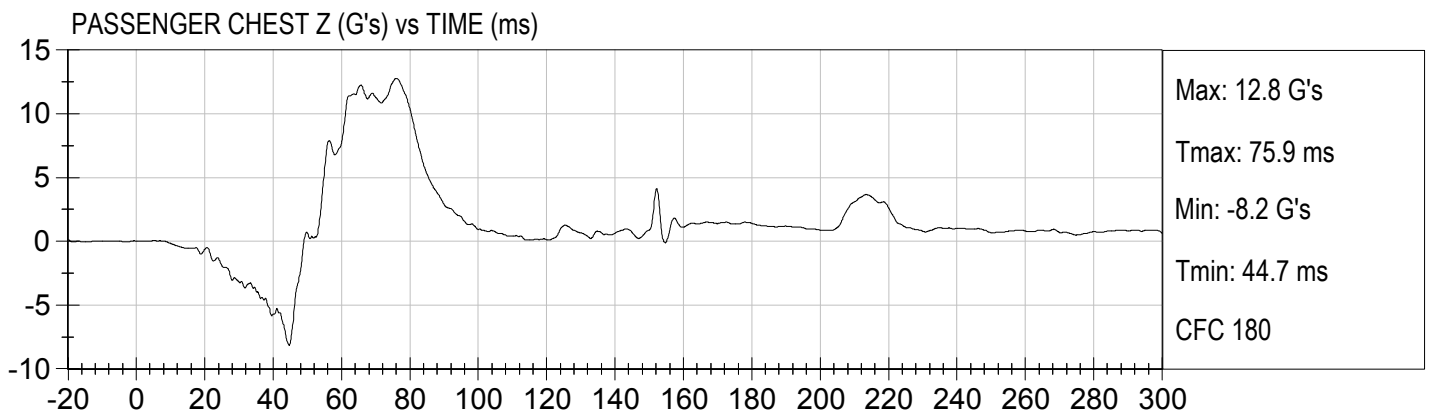
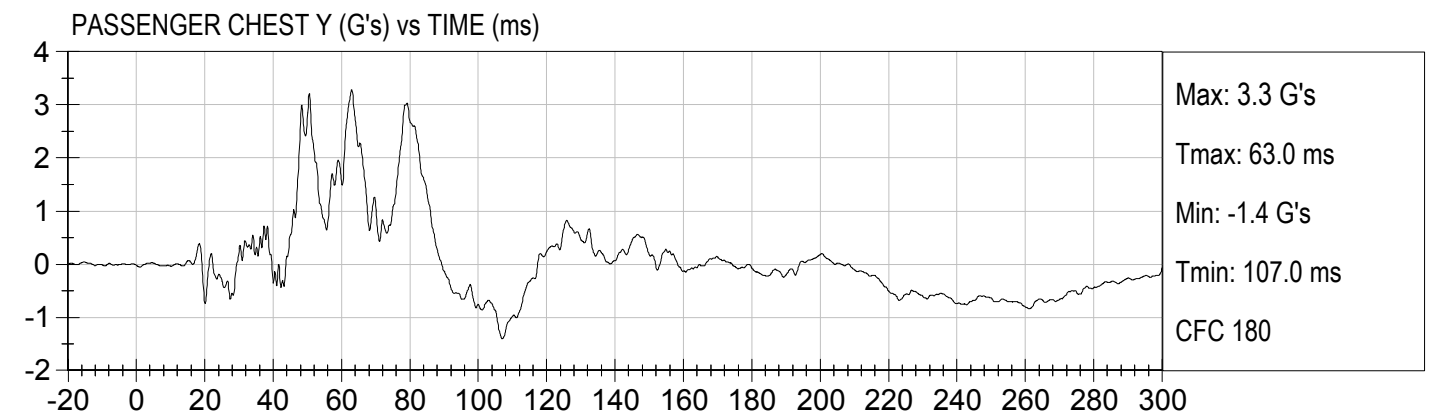
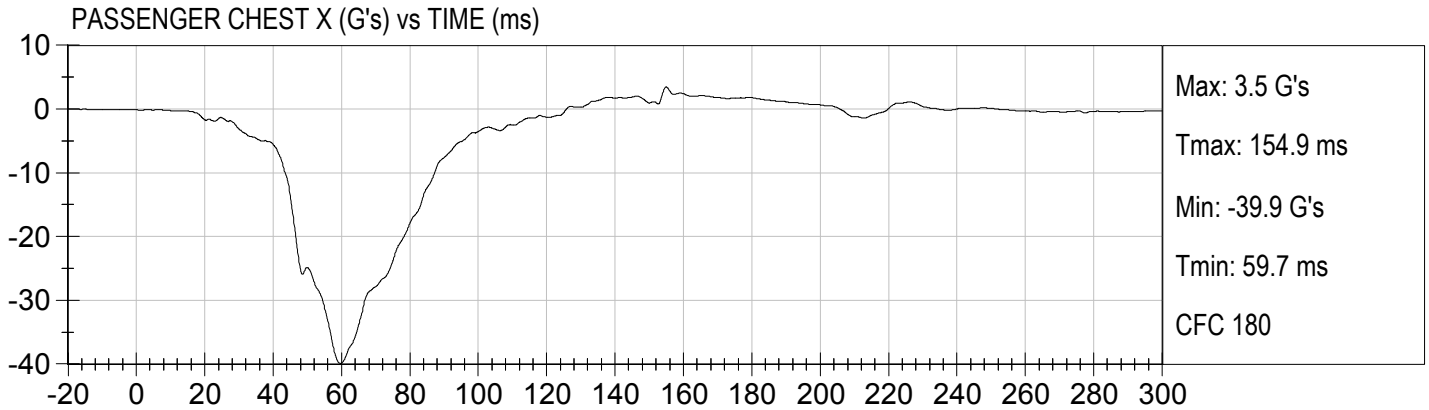




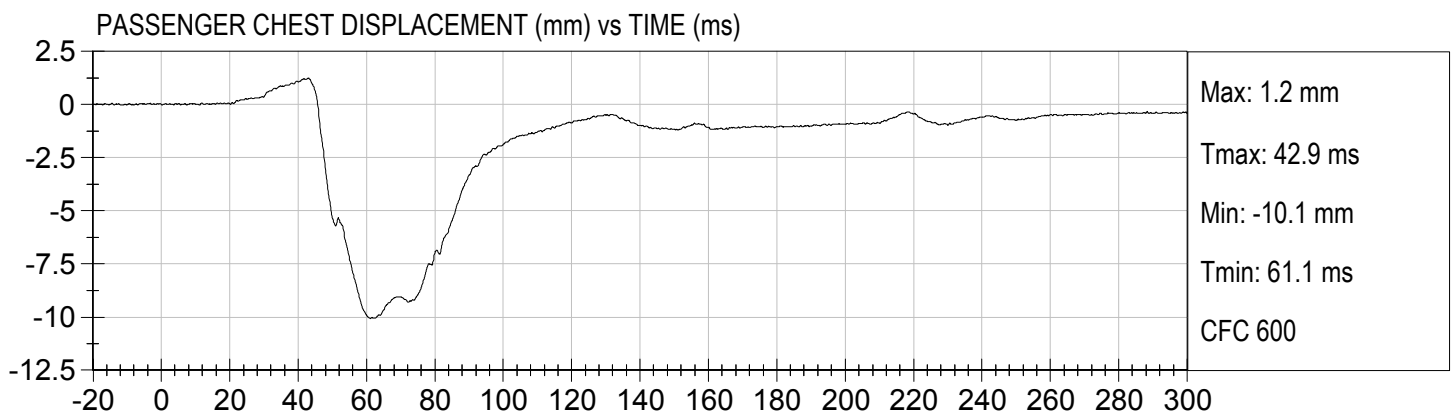
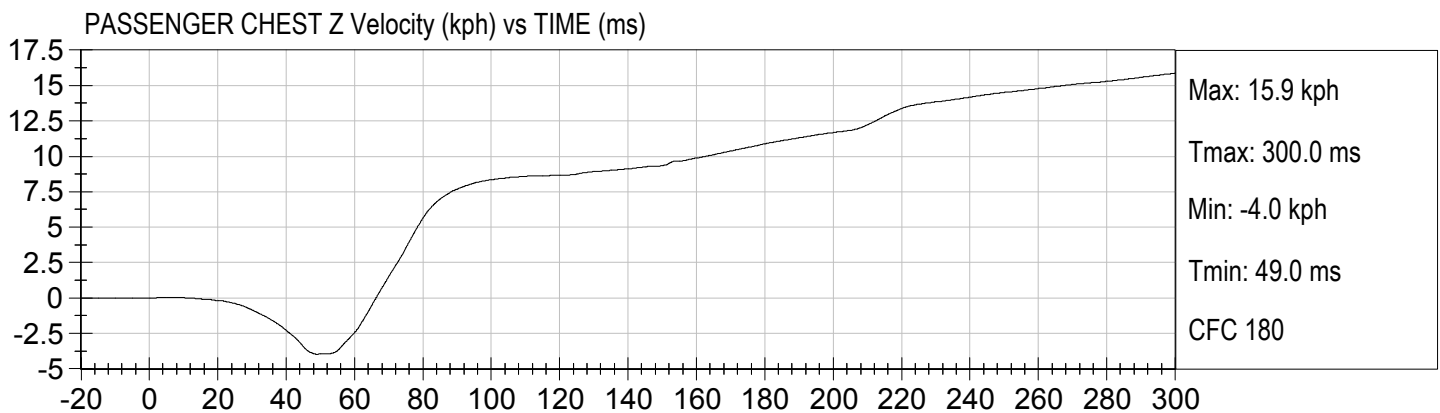
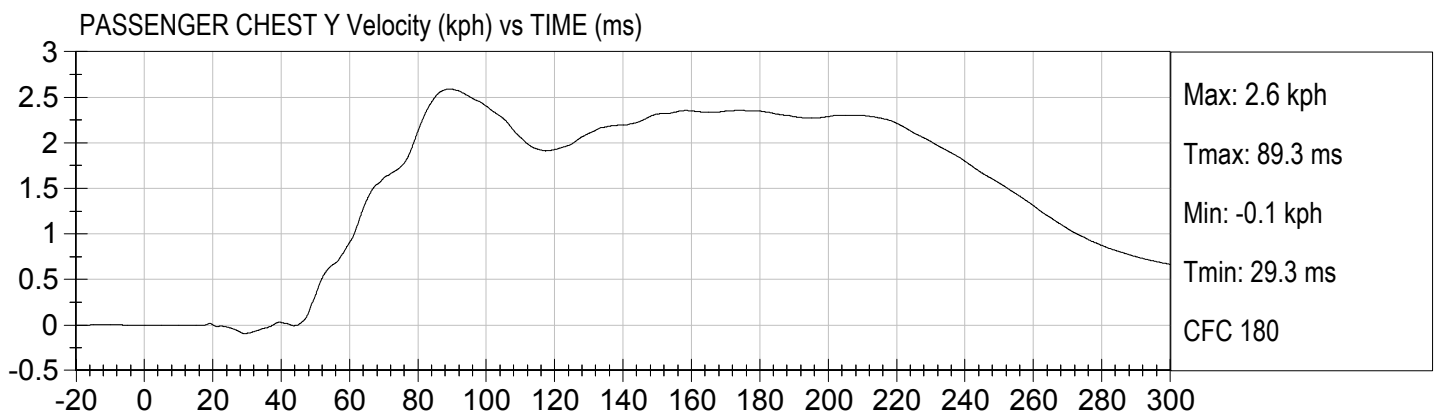
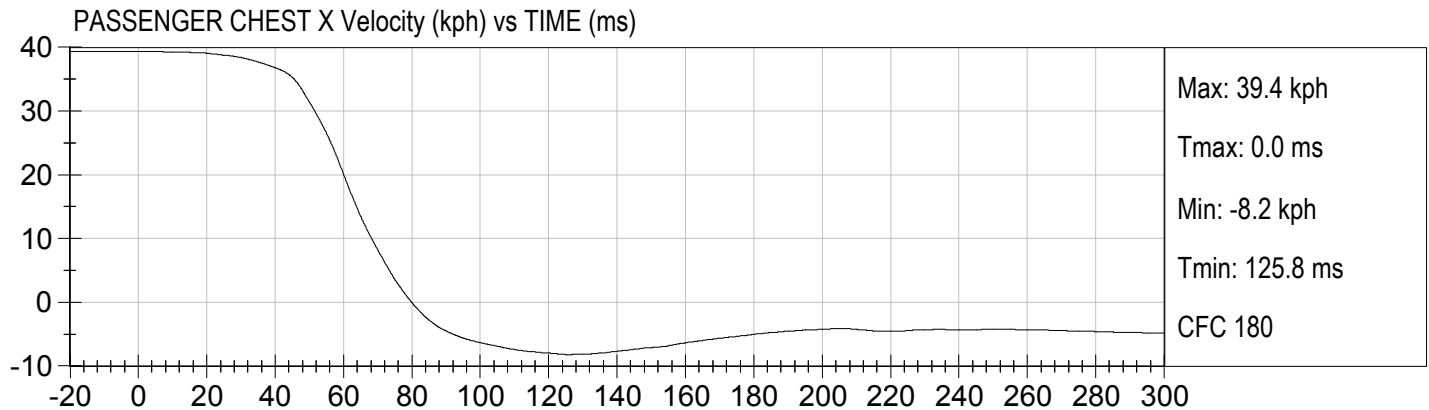


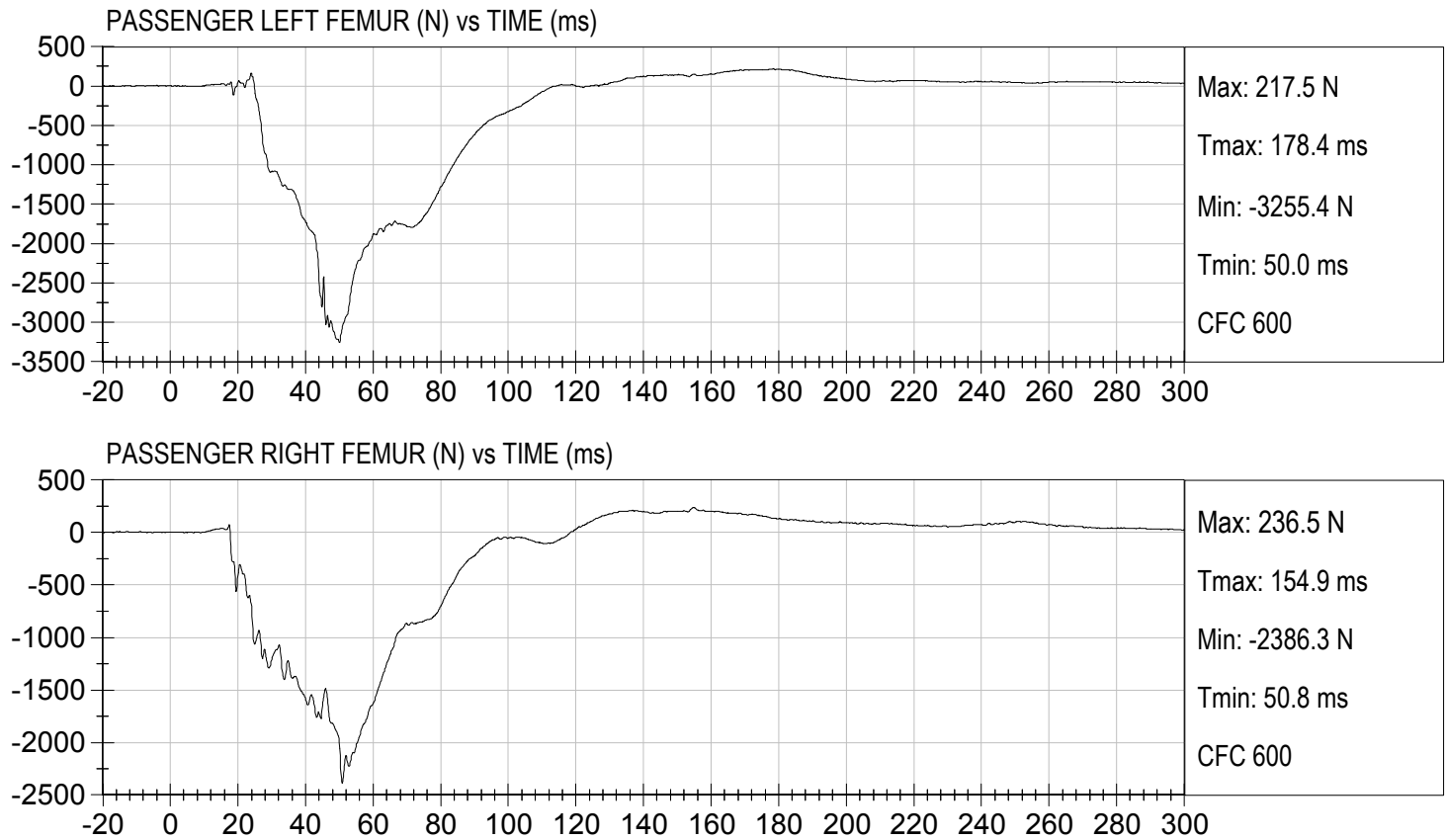


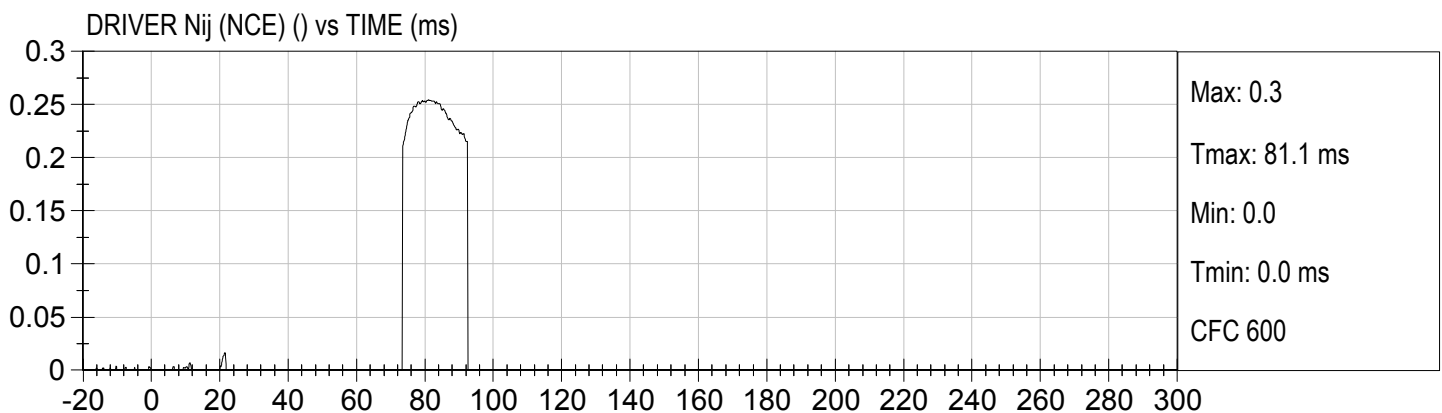
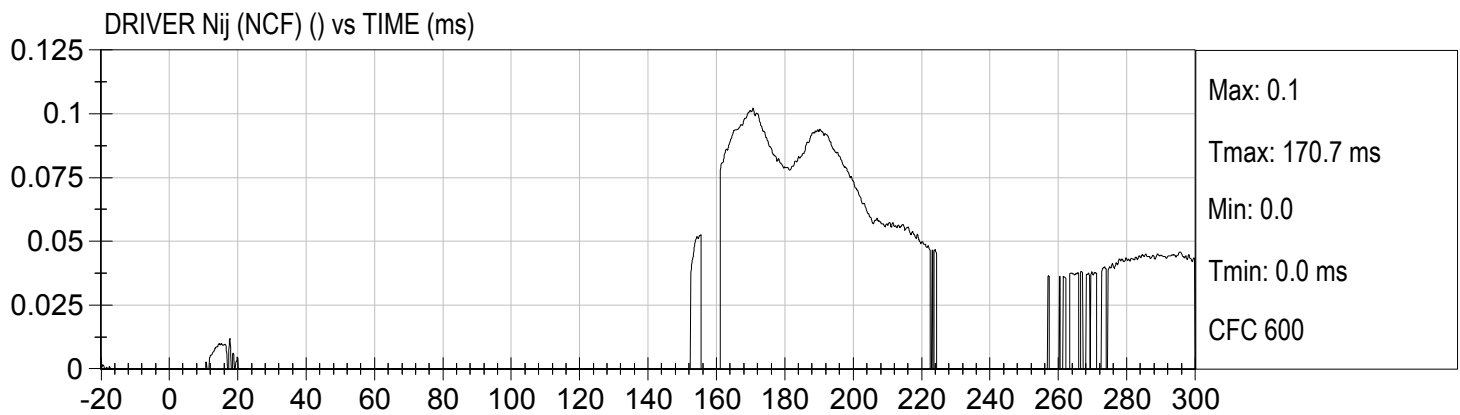
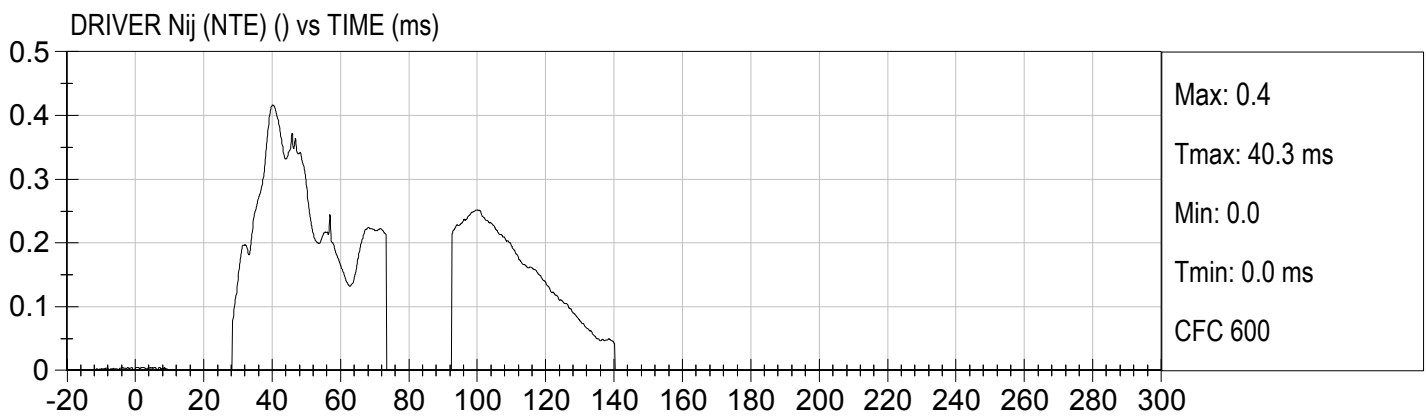
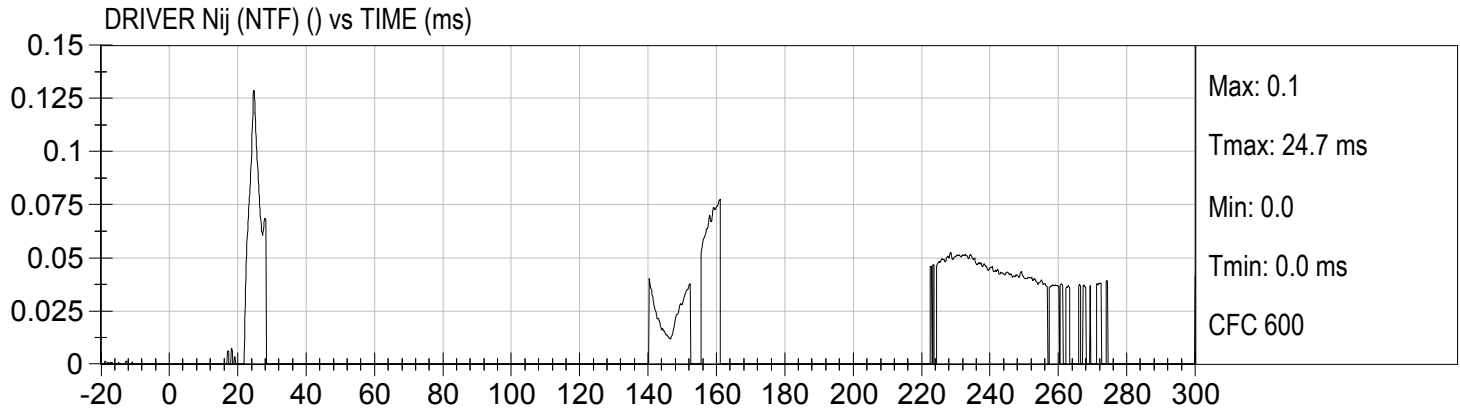


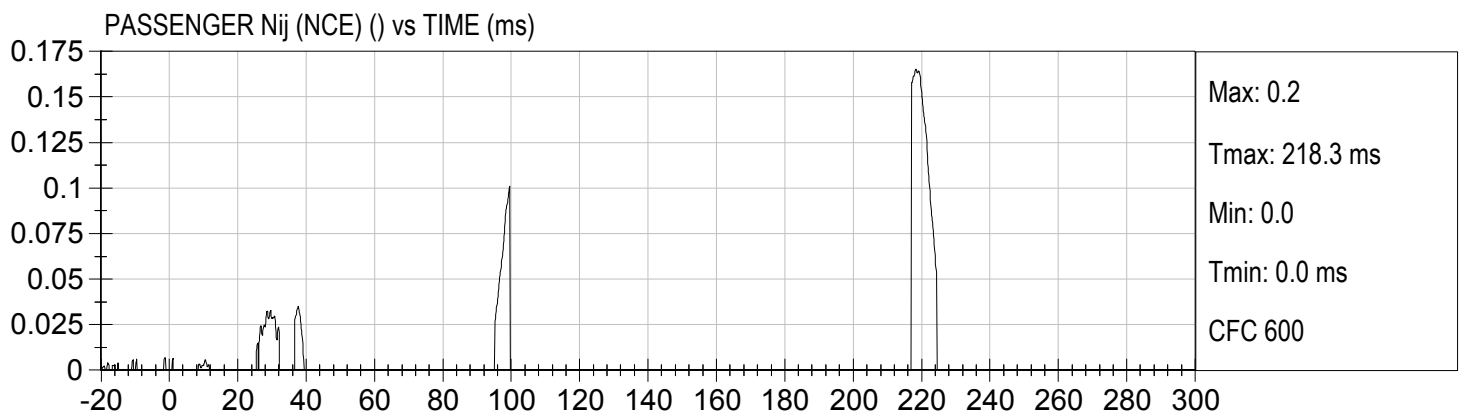
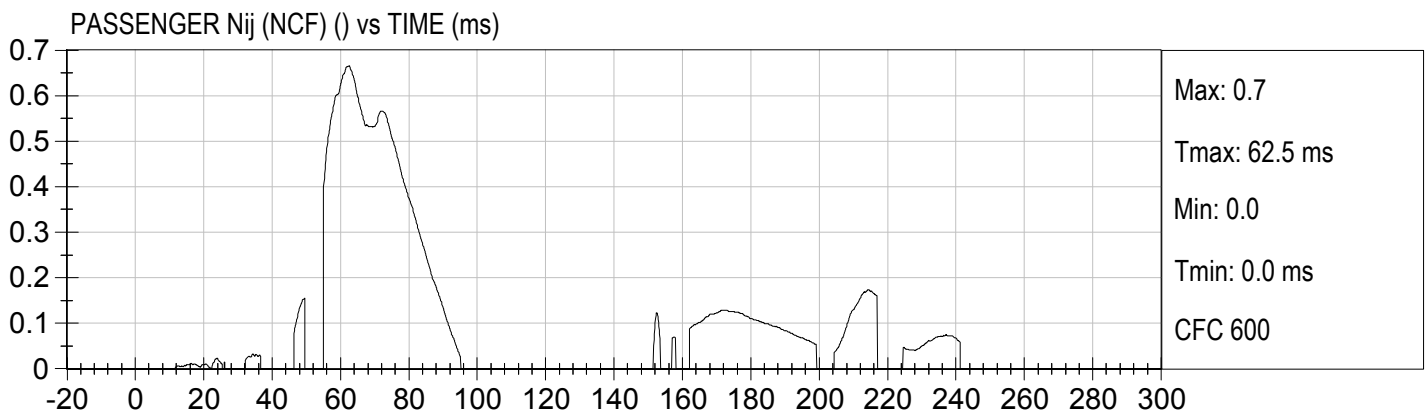
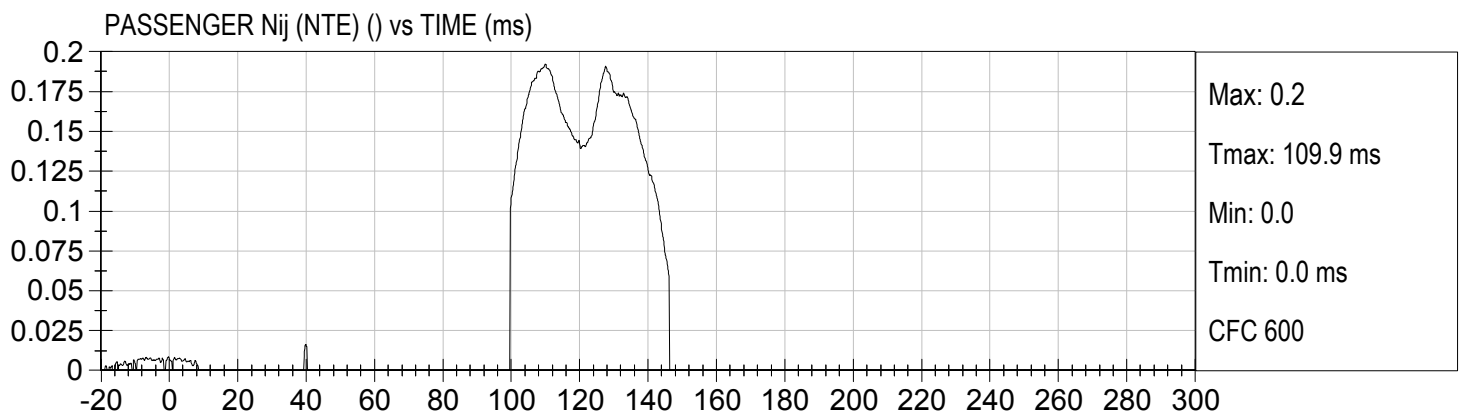
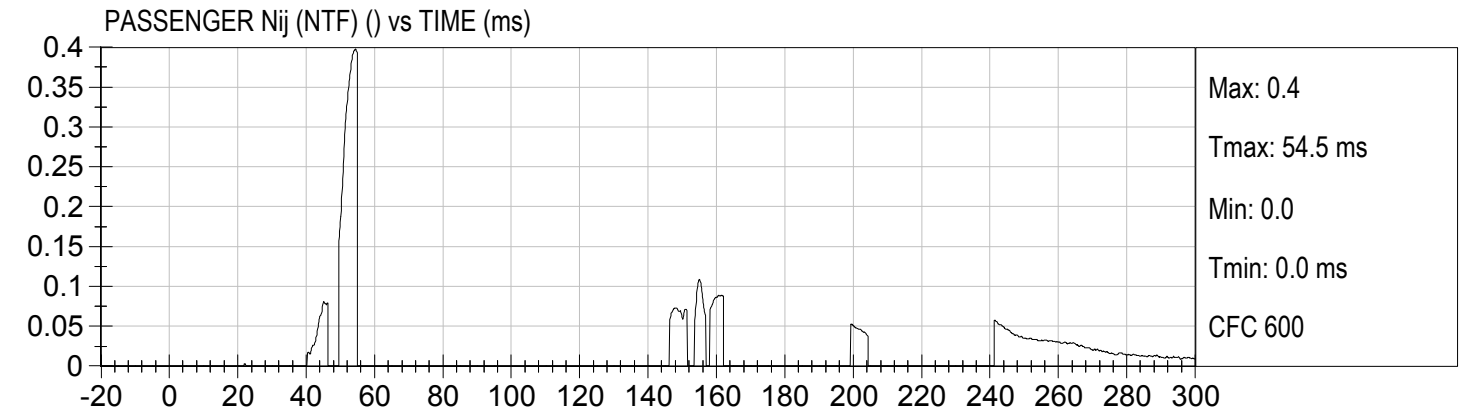


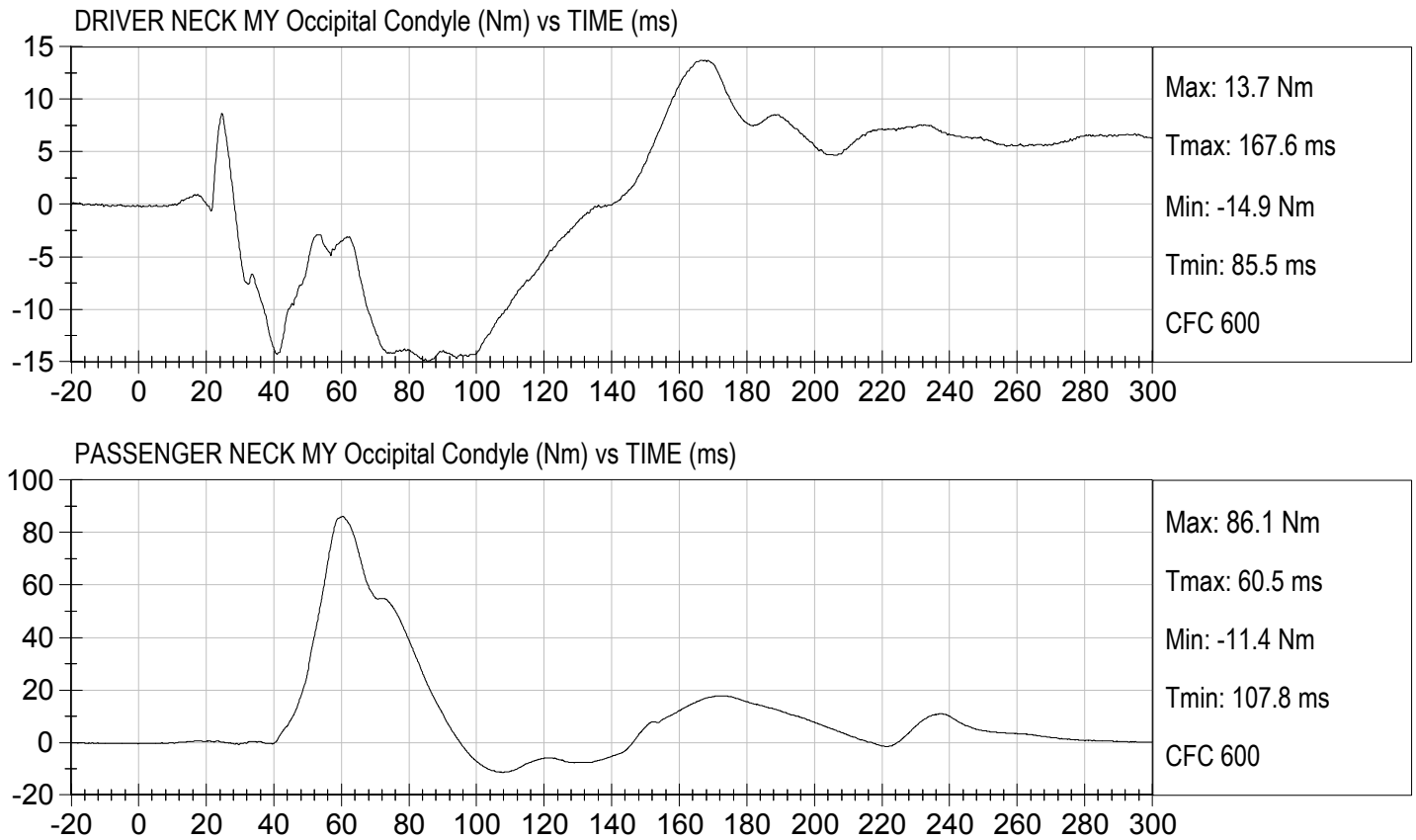


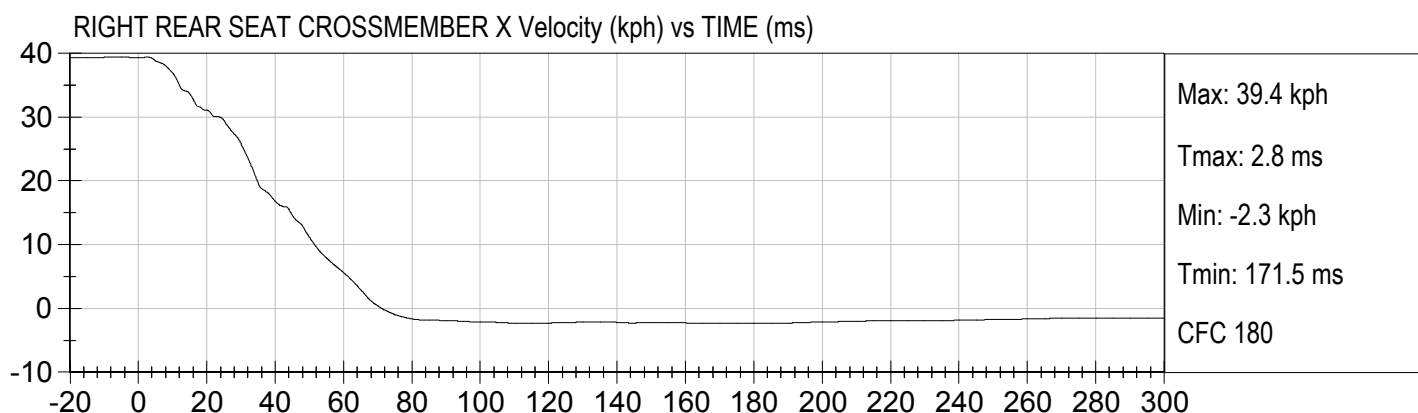
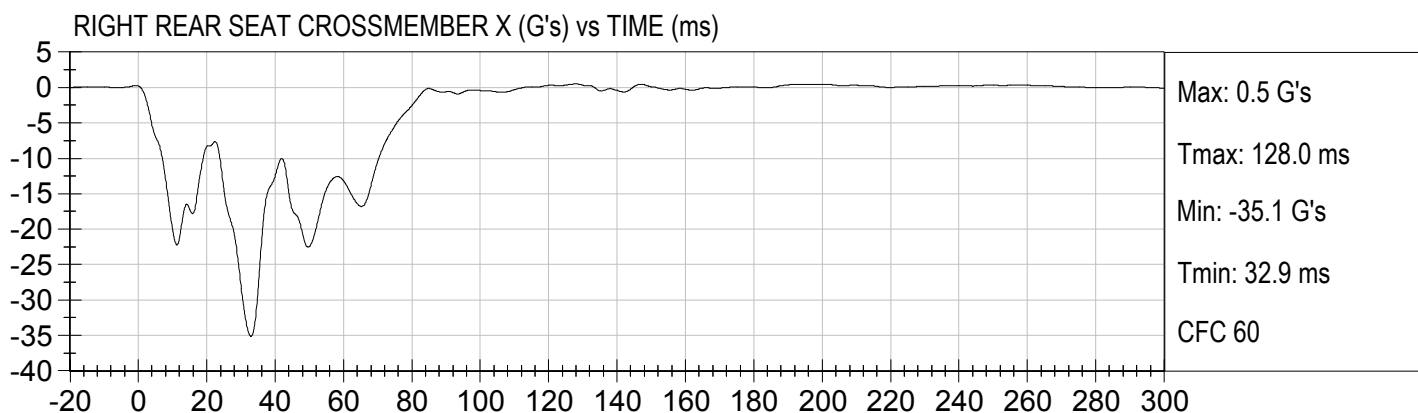
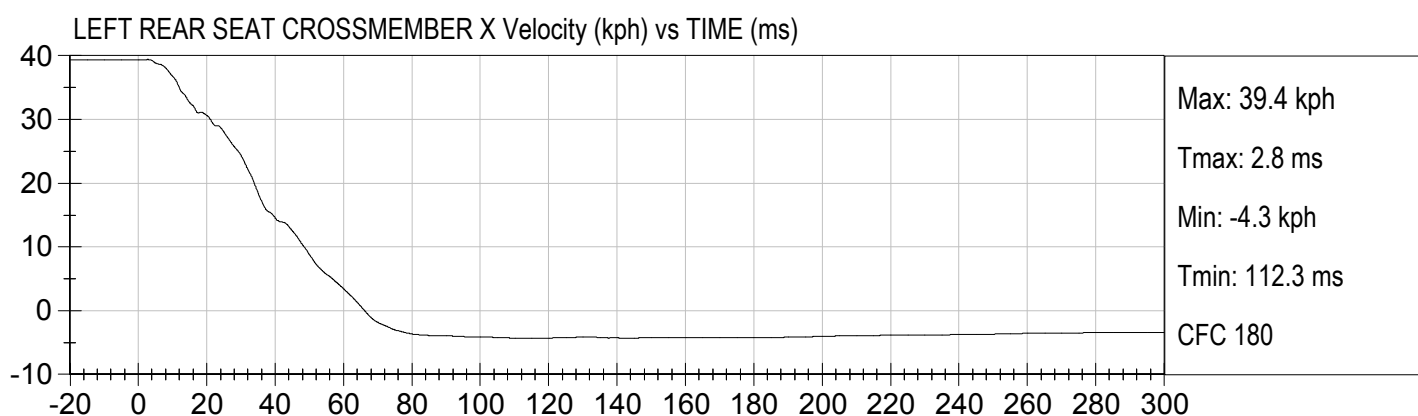
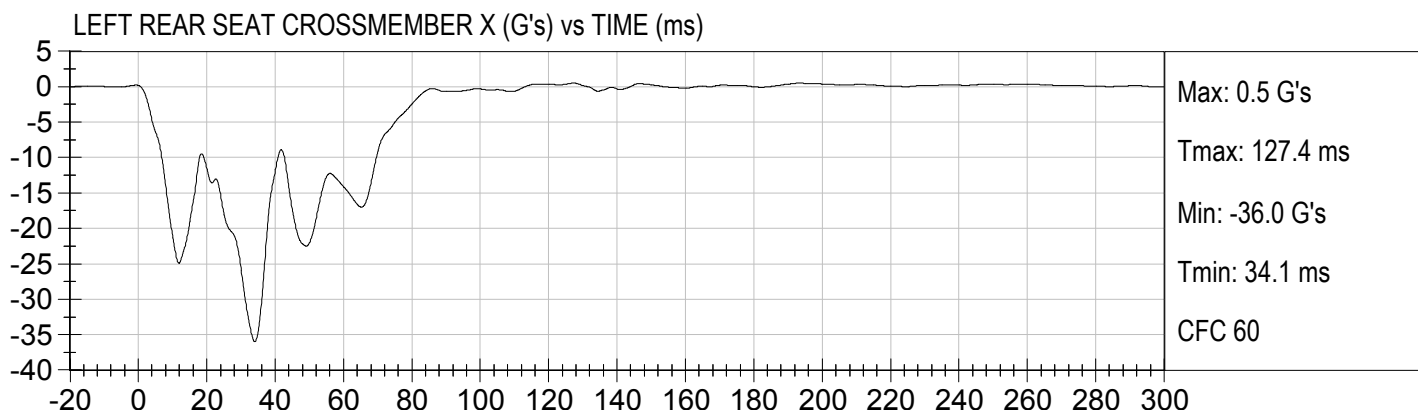


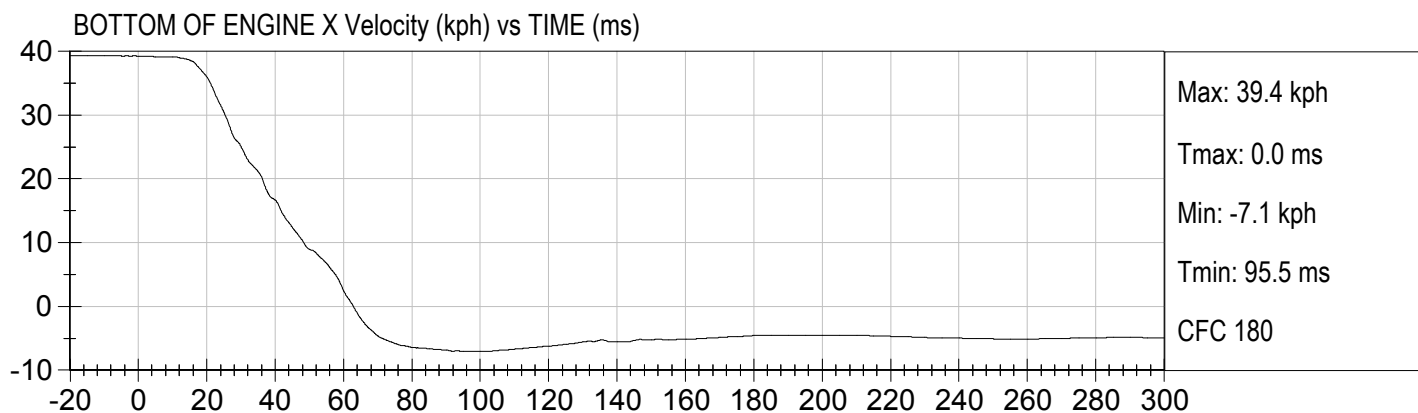
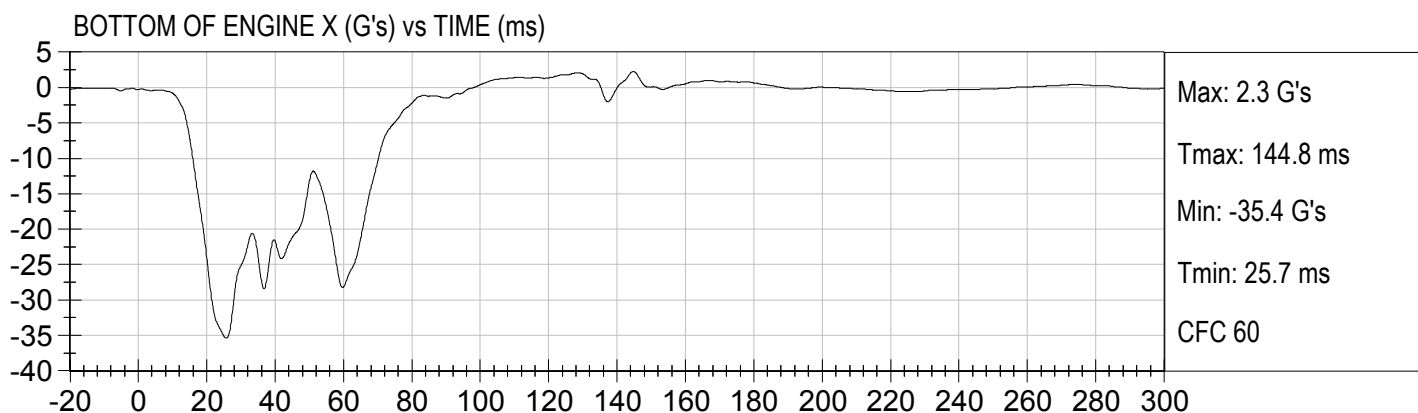
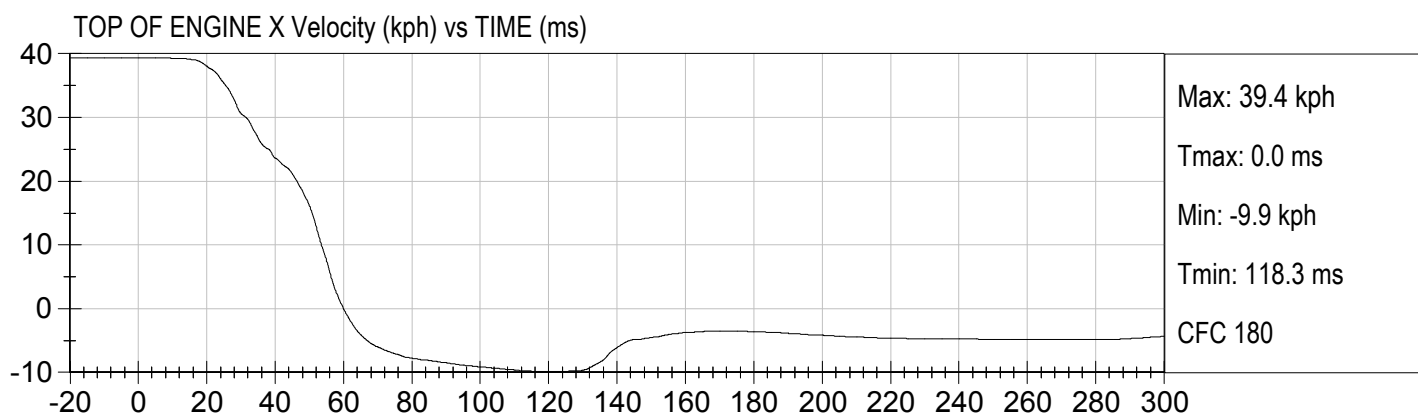
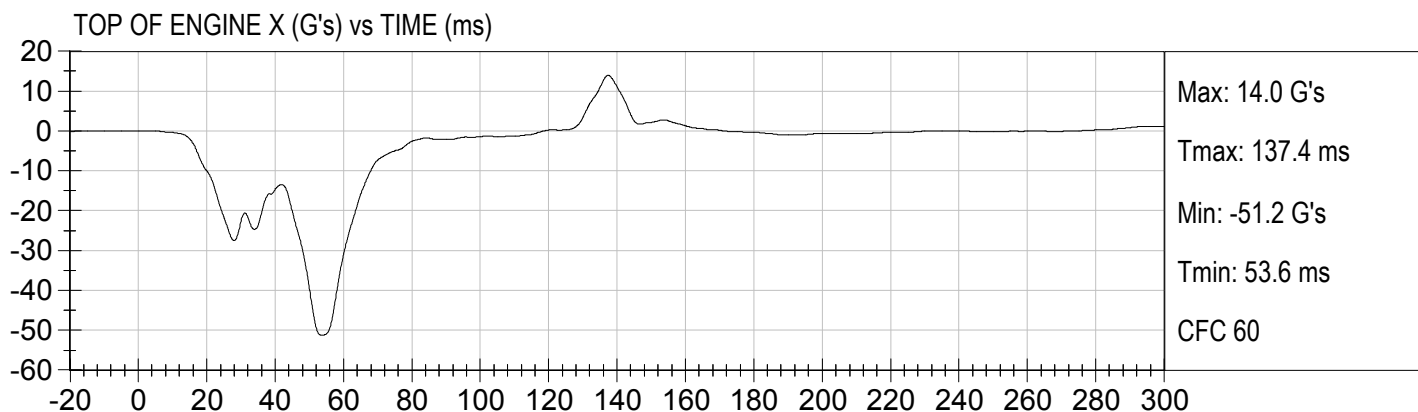


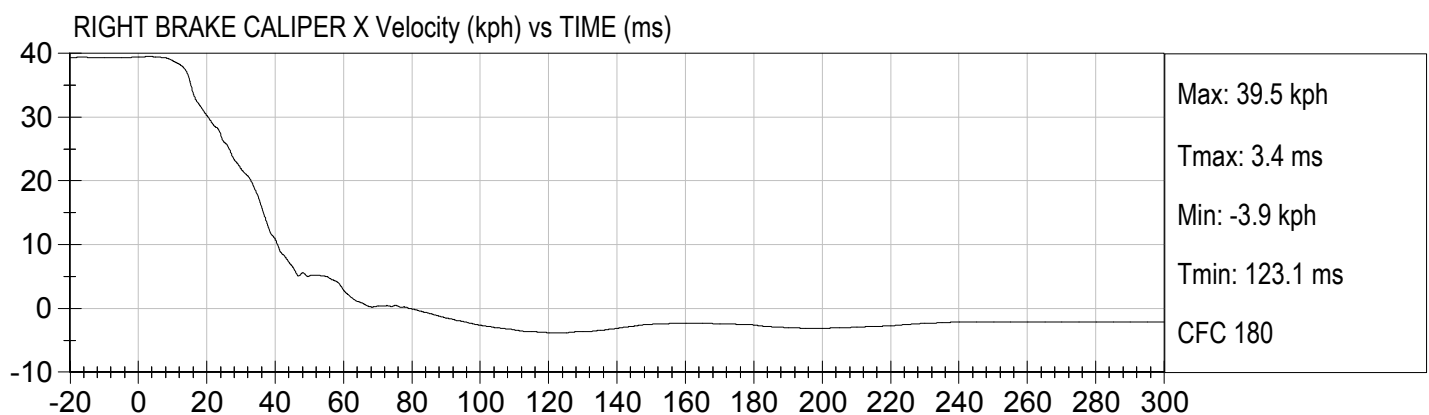
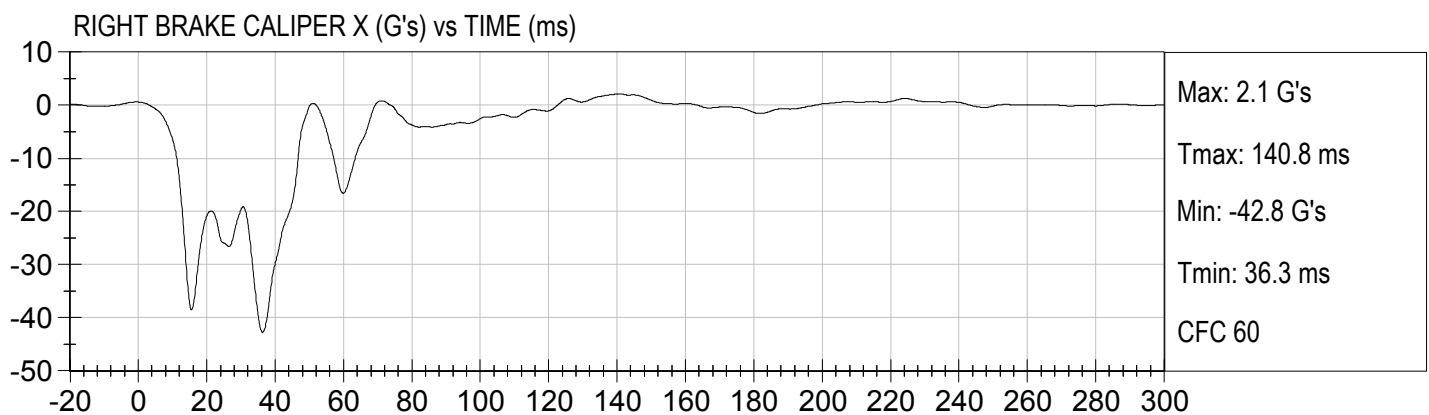
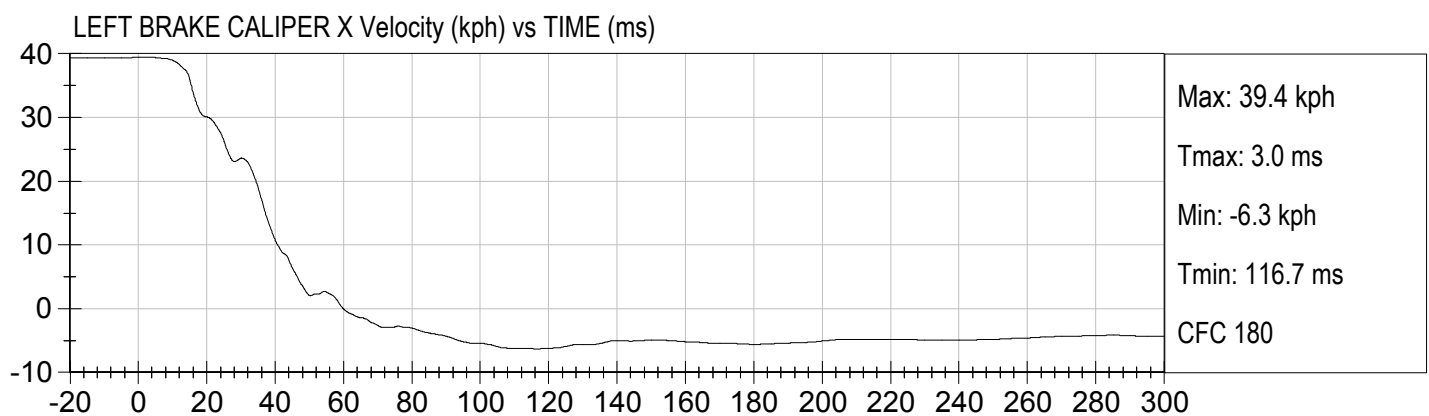
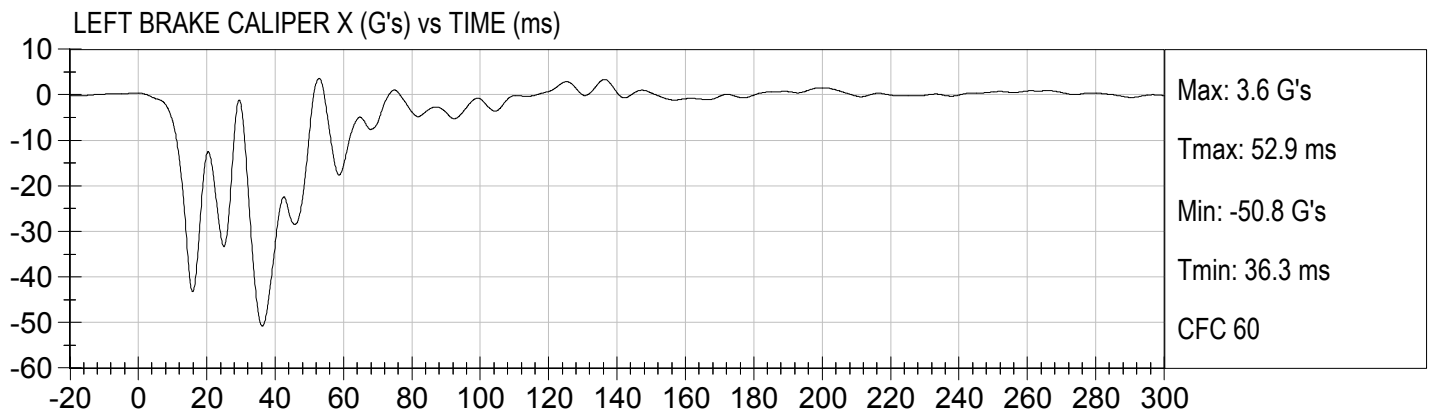




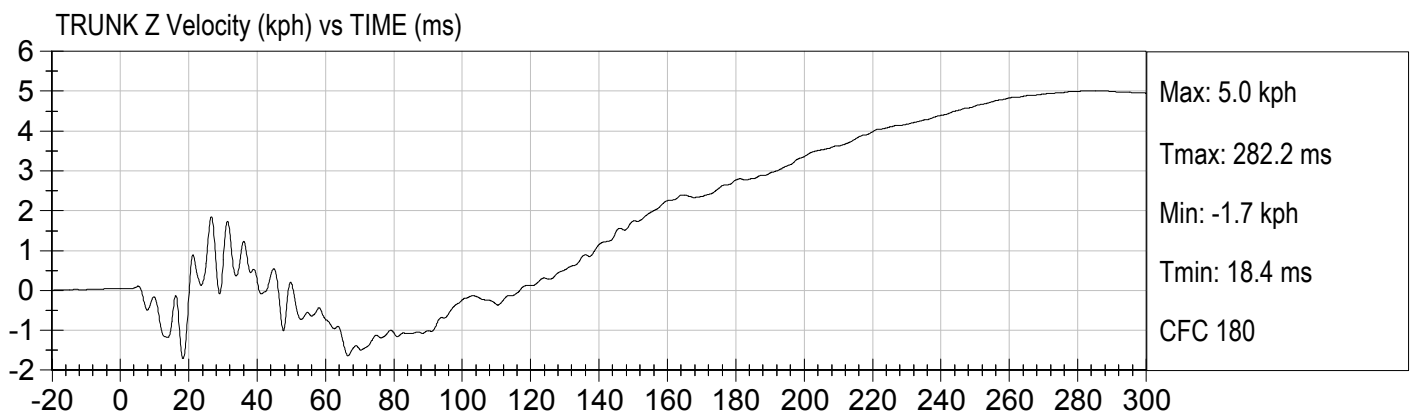
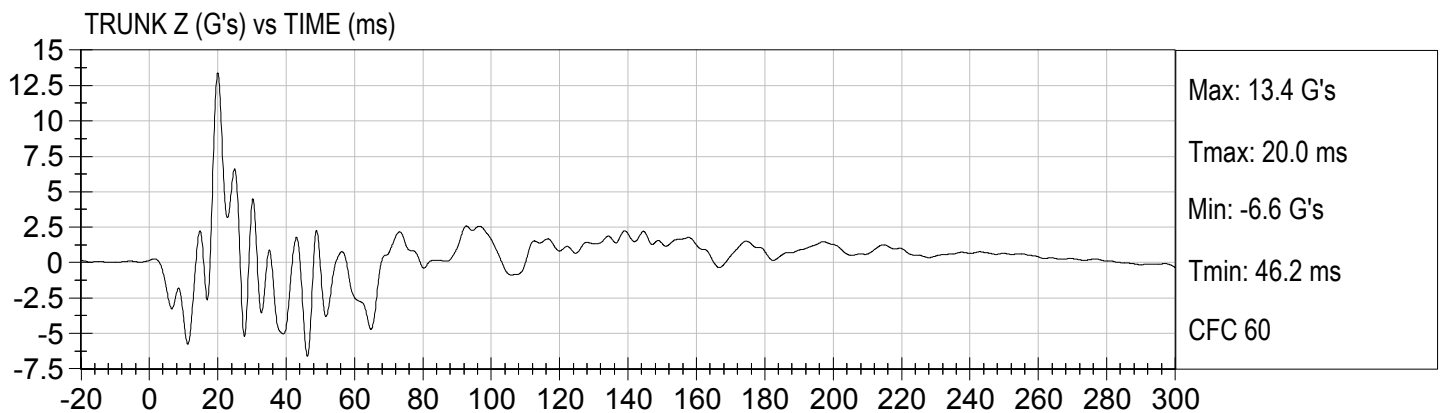
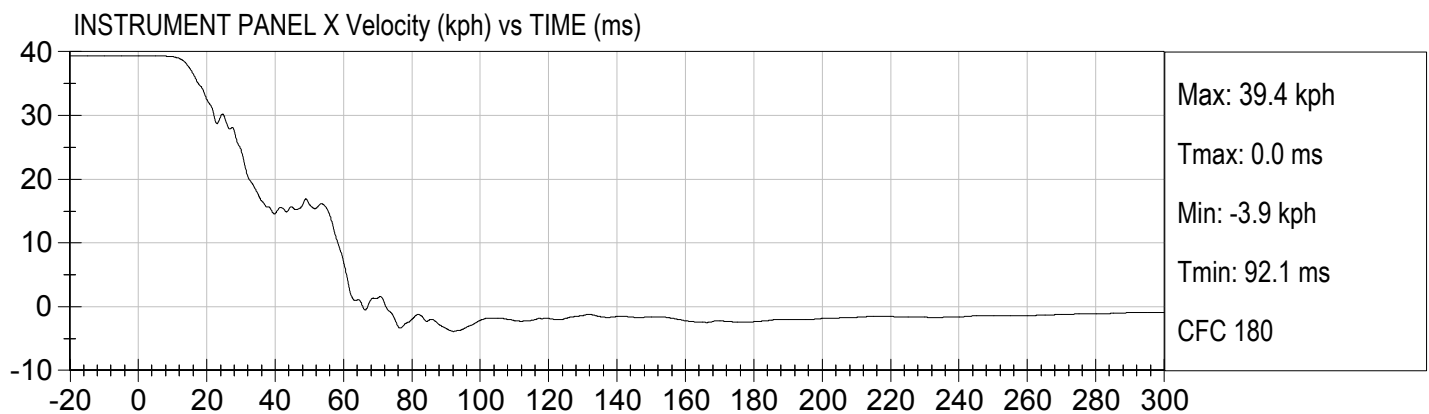
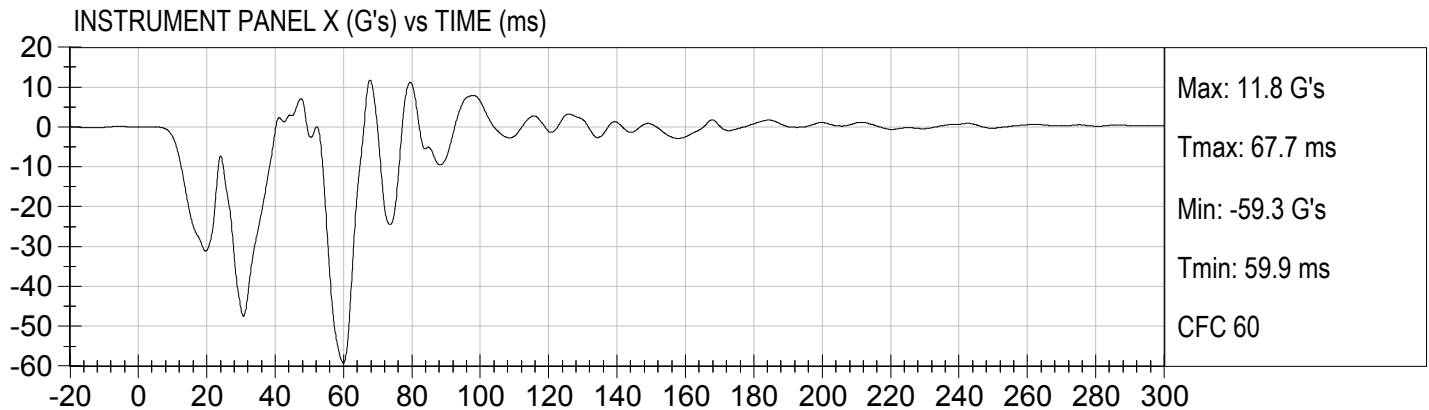












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**LOW RISK TEST DATA**

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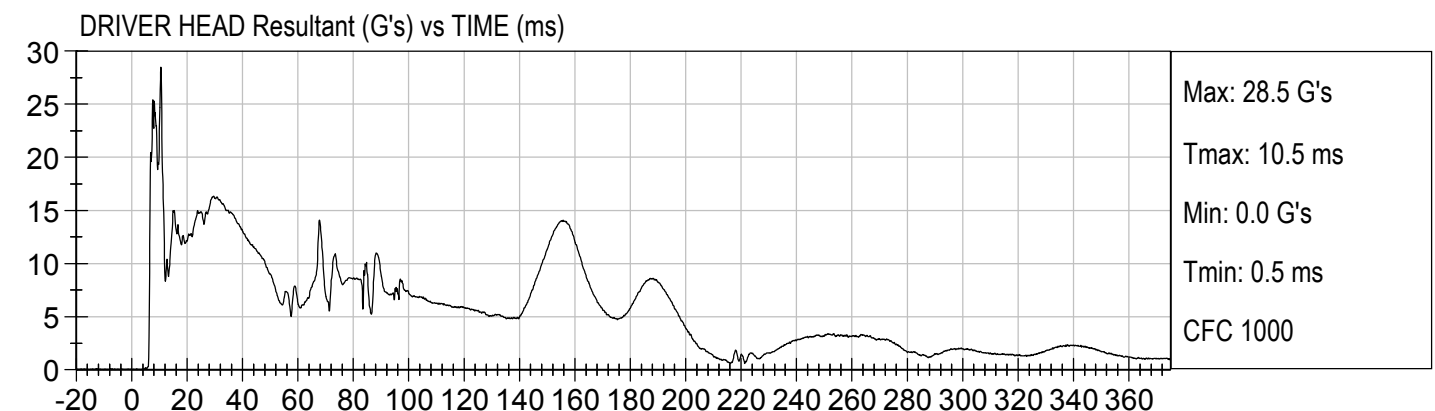
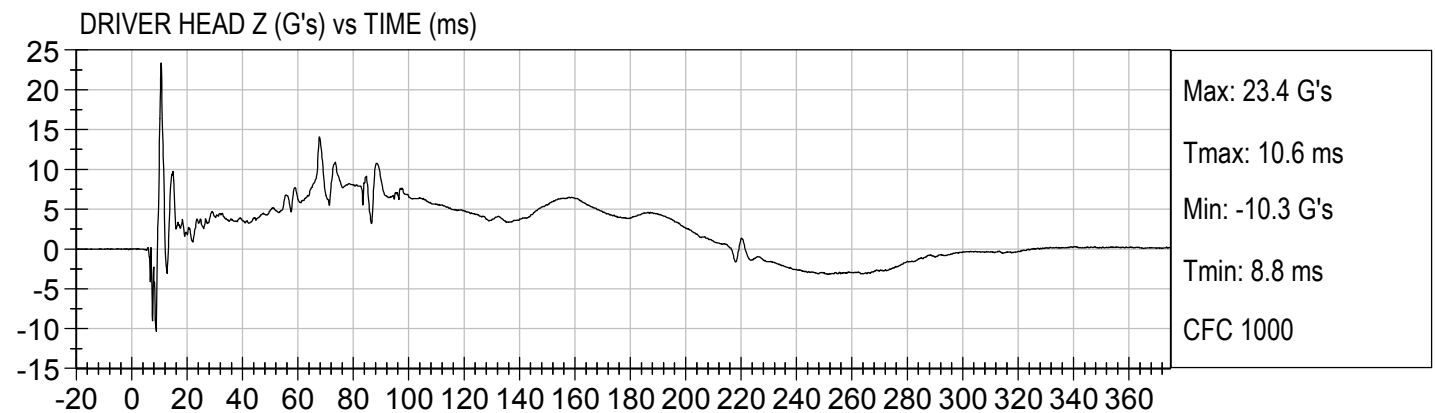
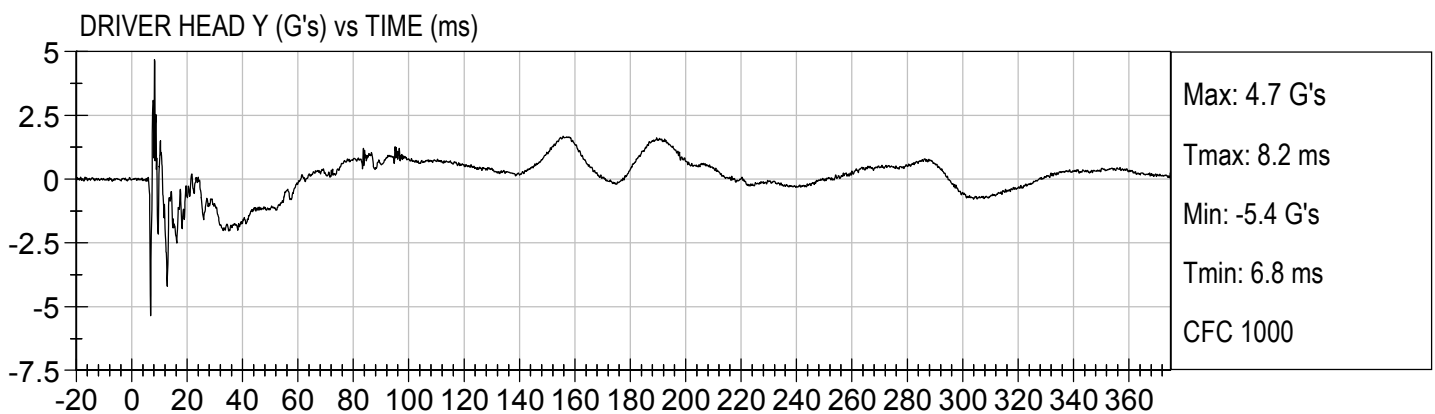
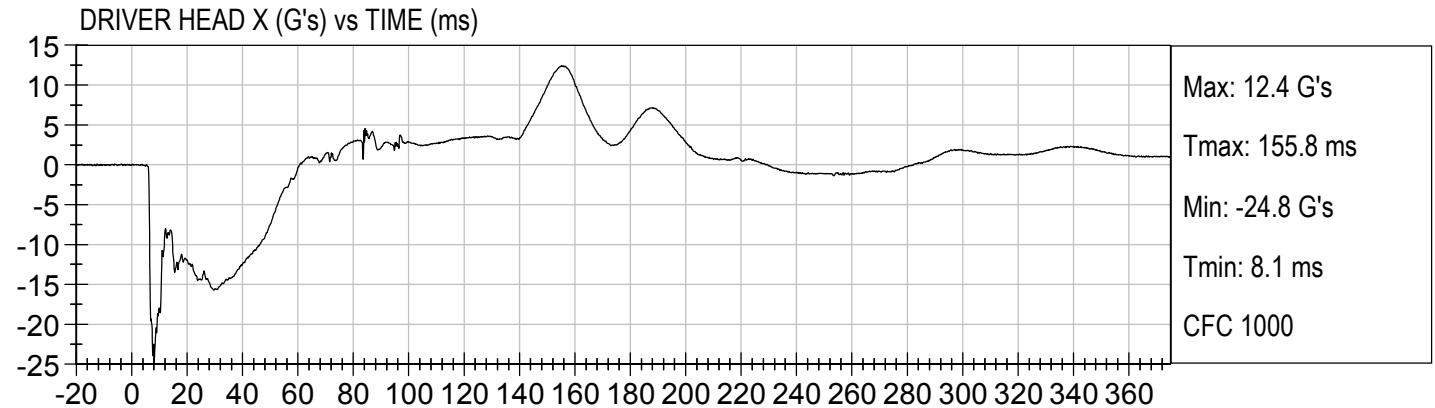
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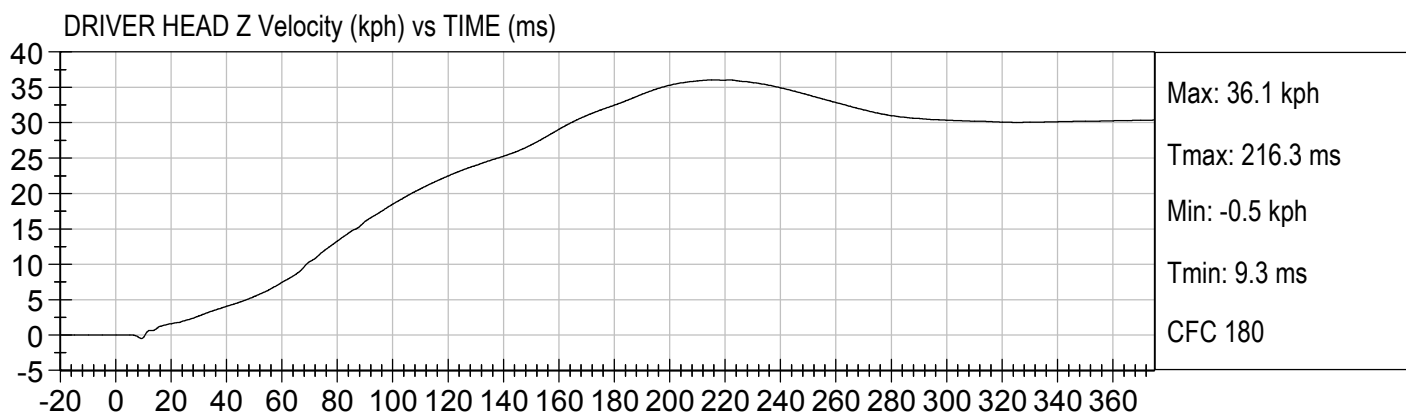
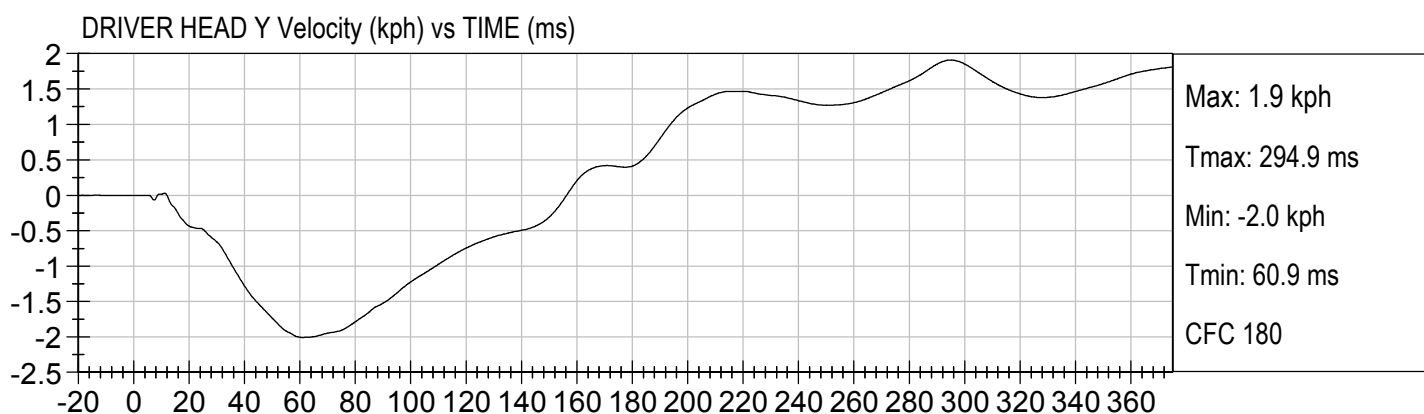
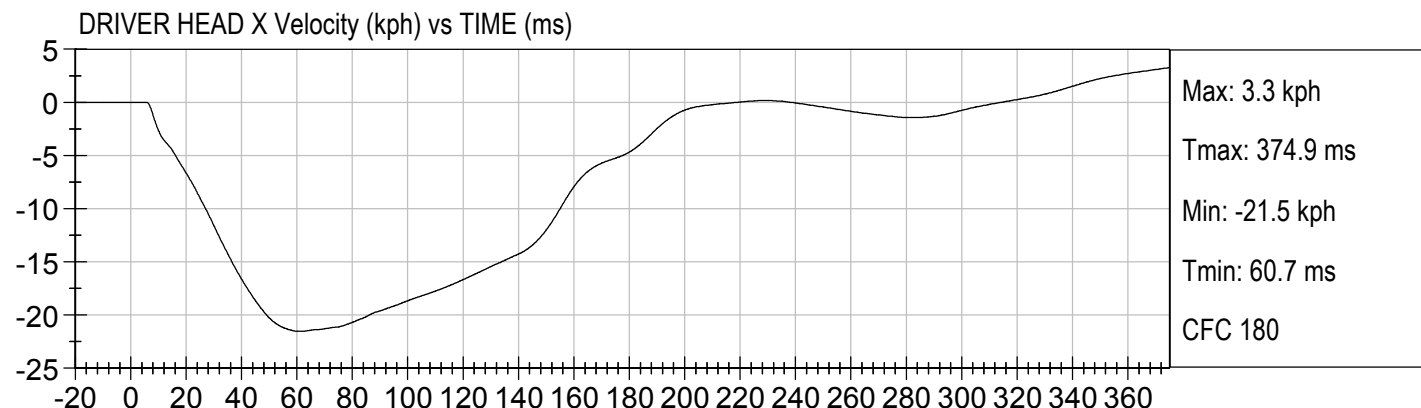
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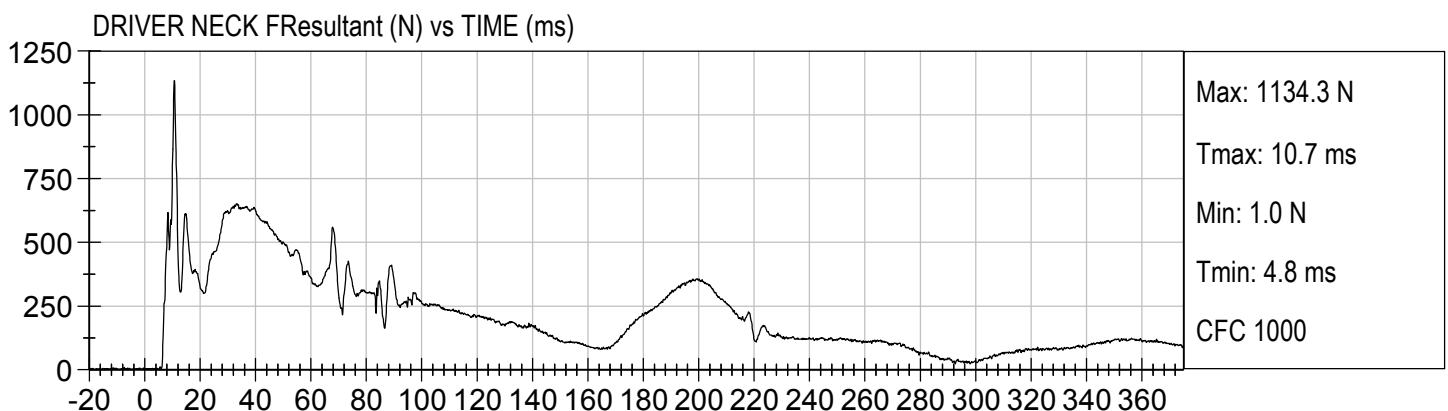
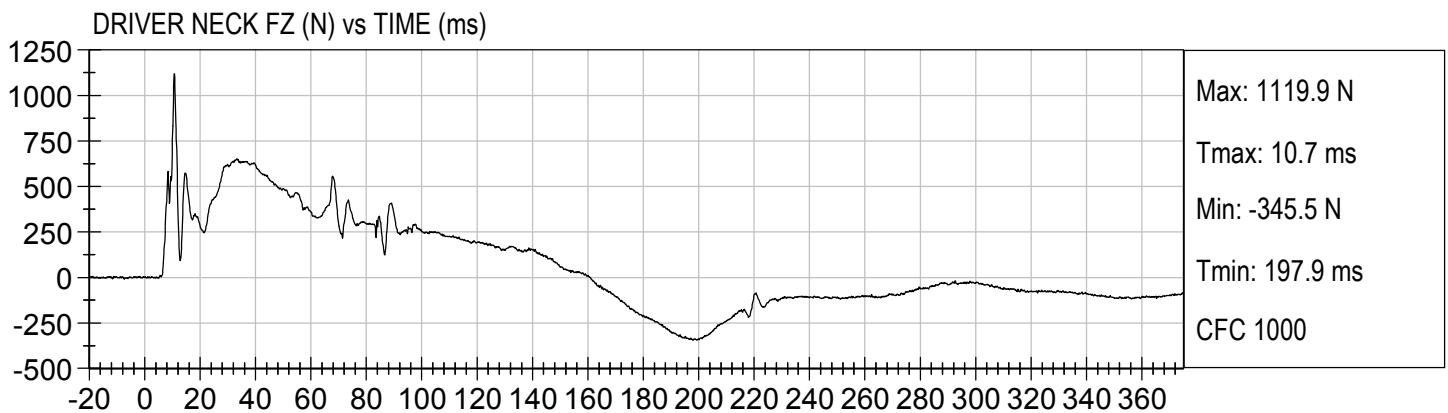
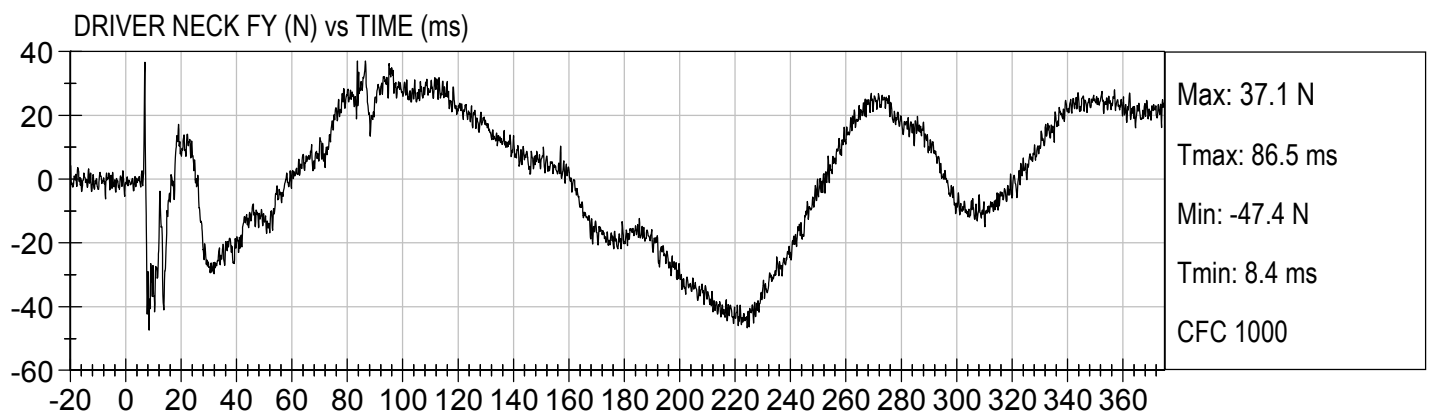
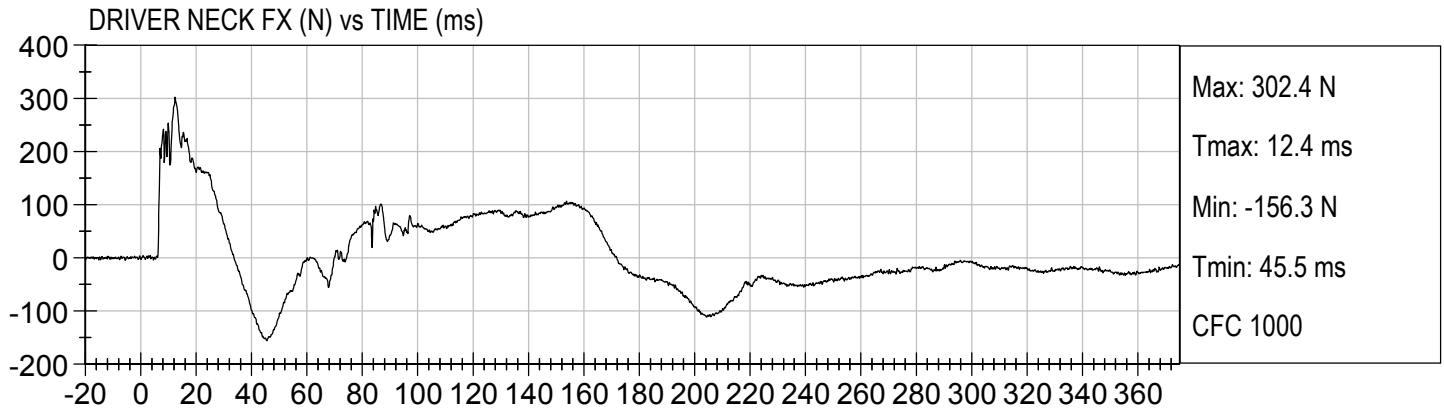
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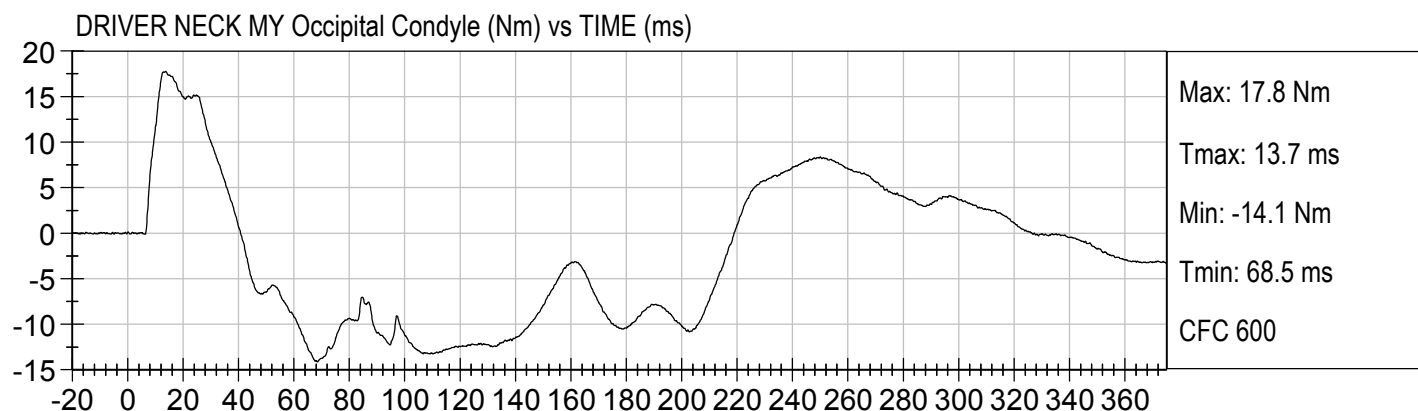
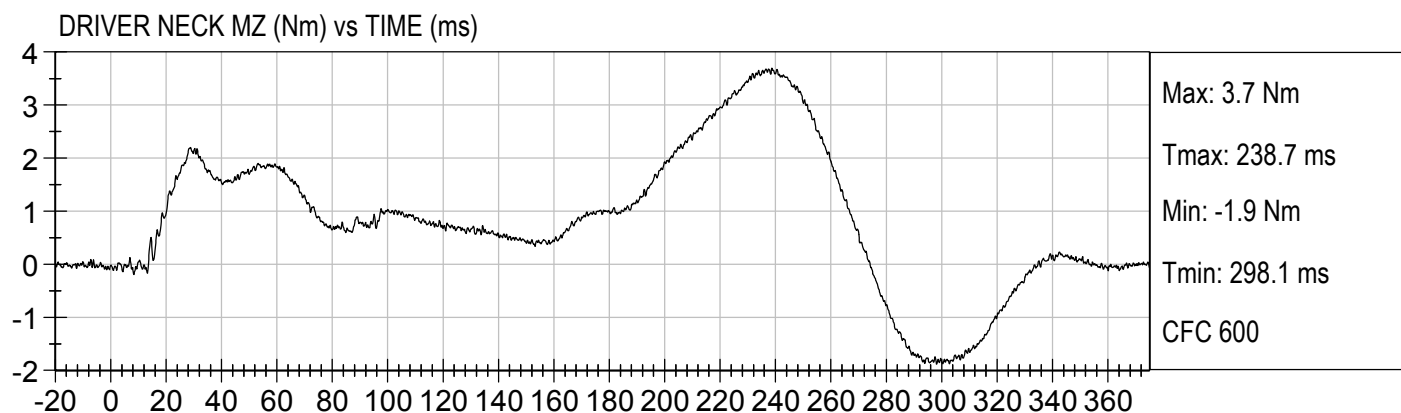
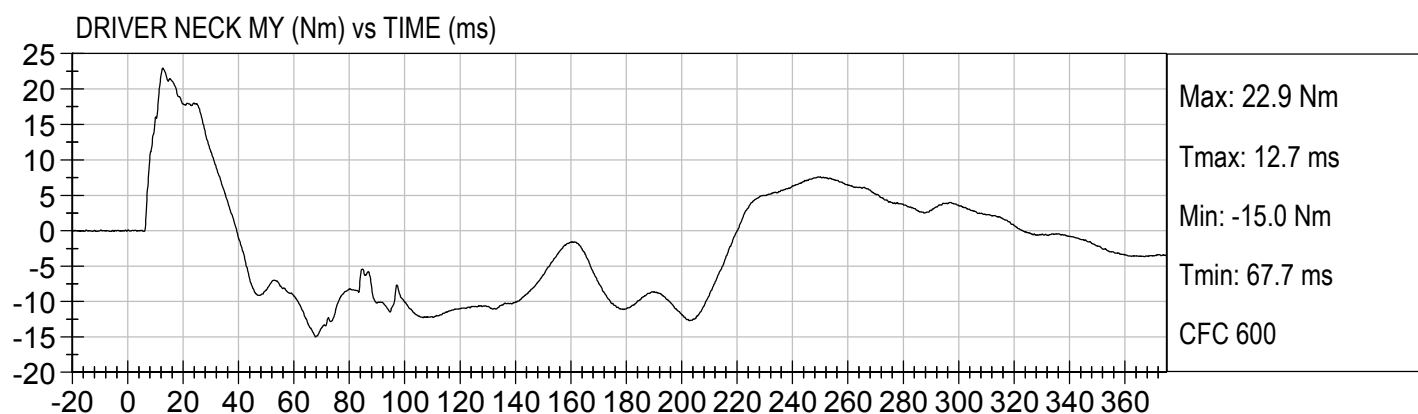
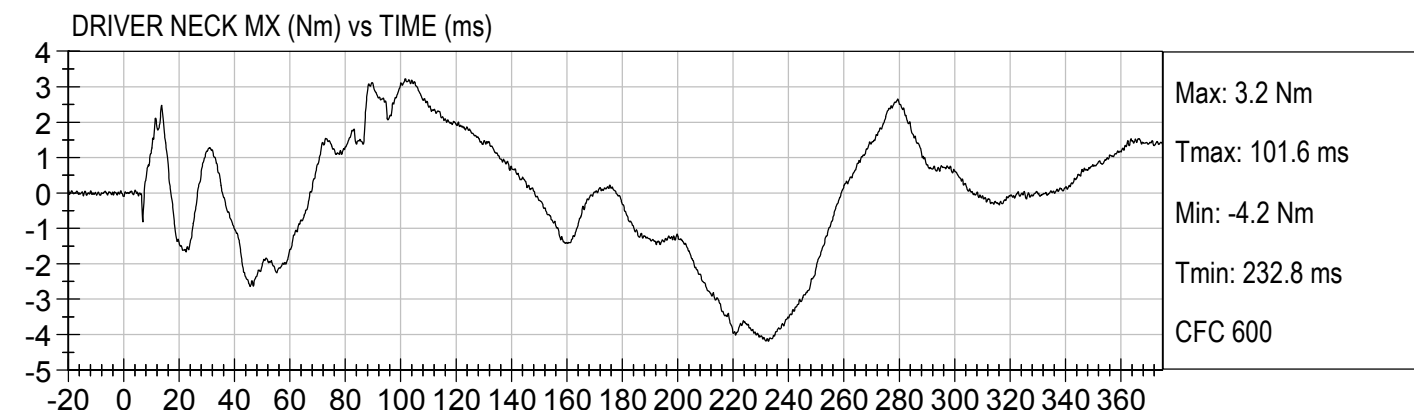
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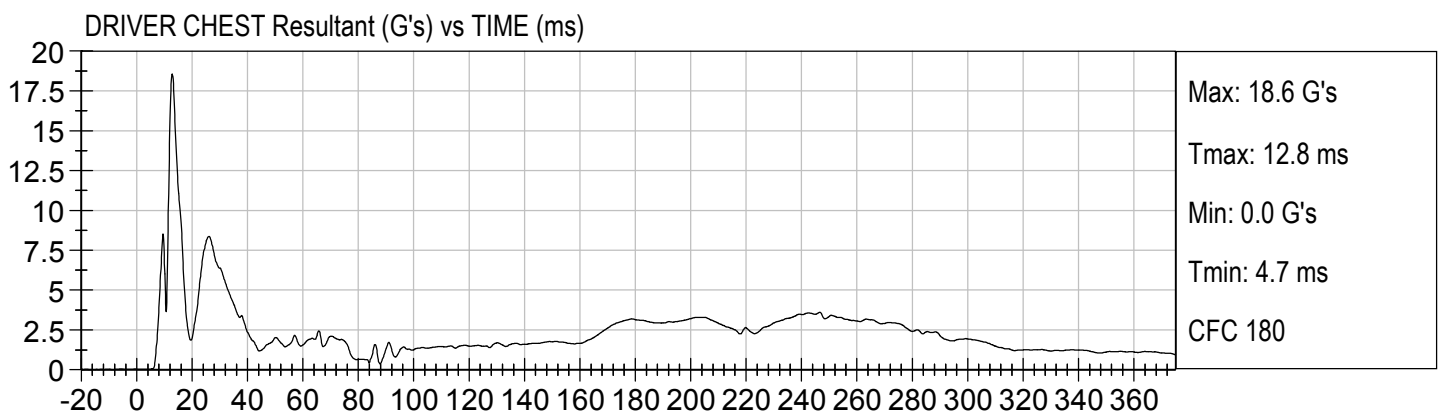
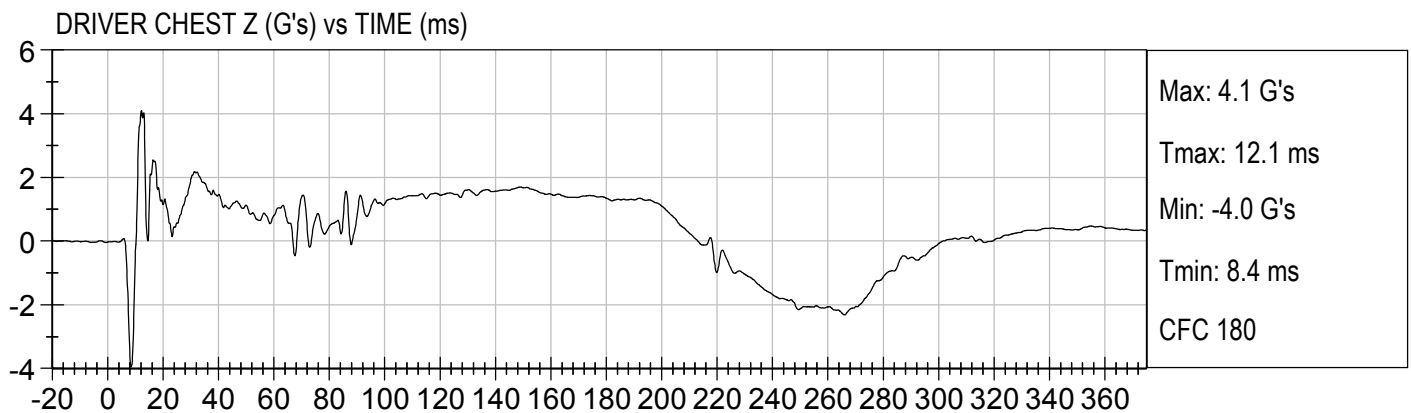
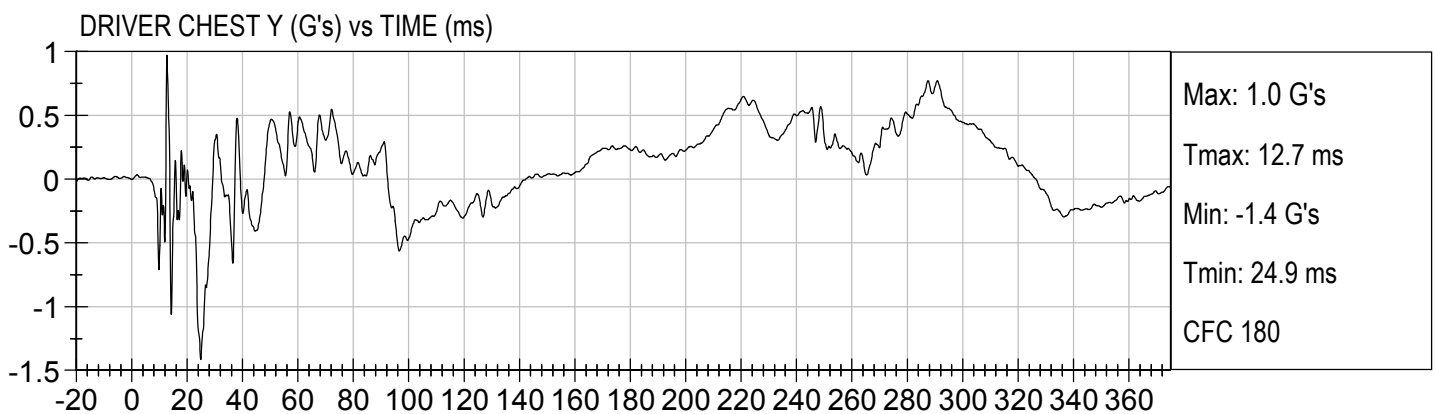
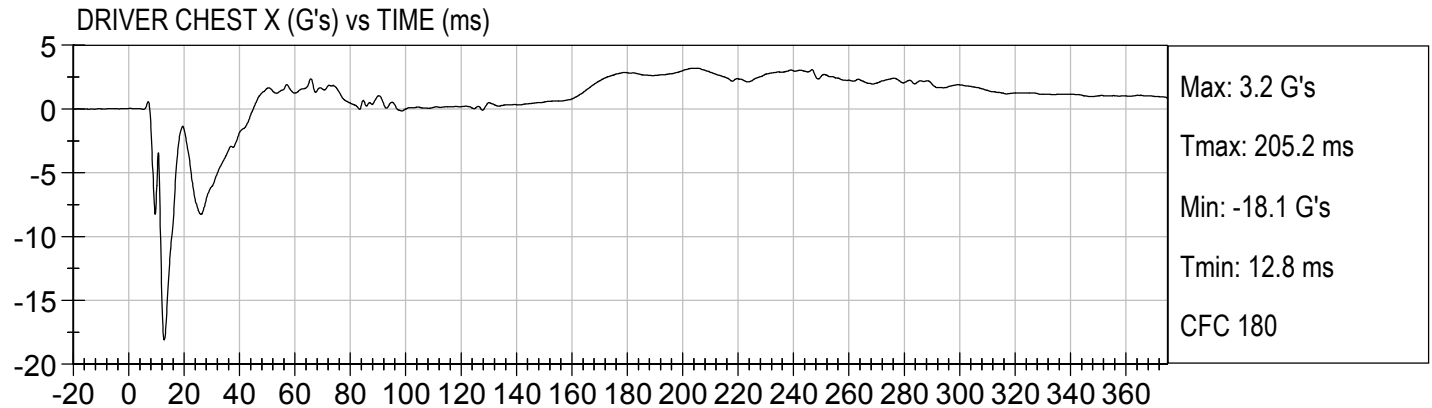


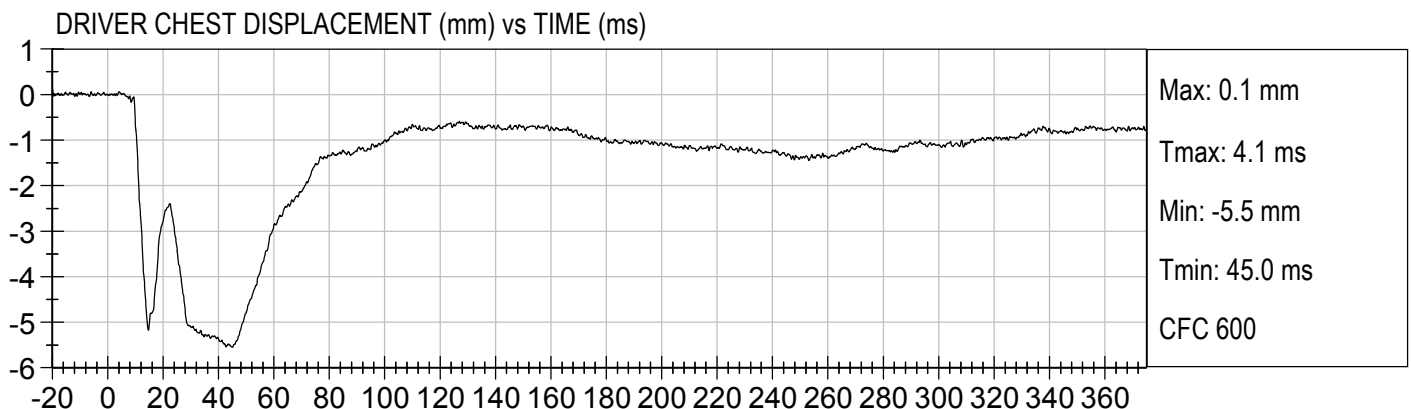
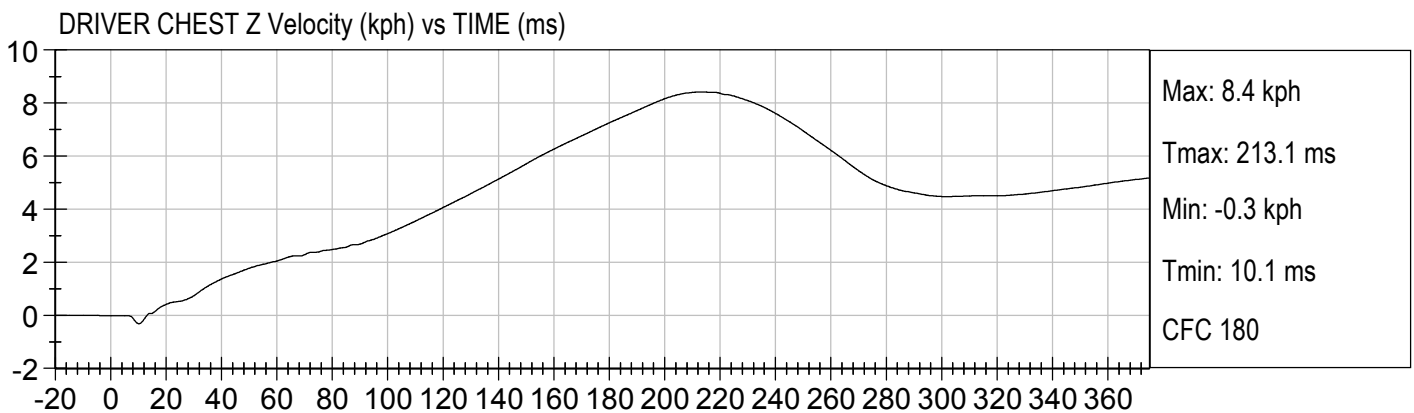
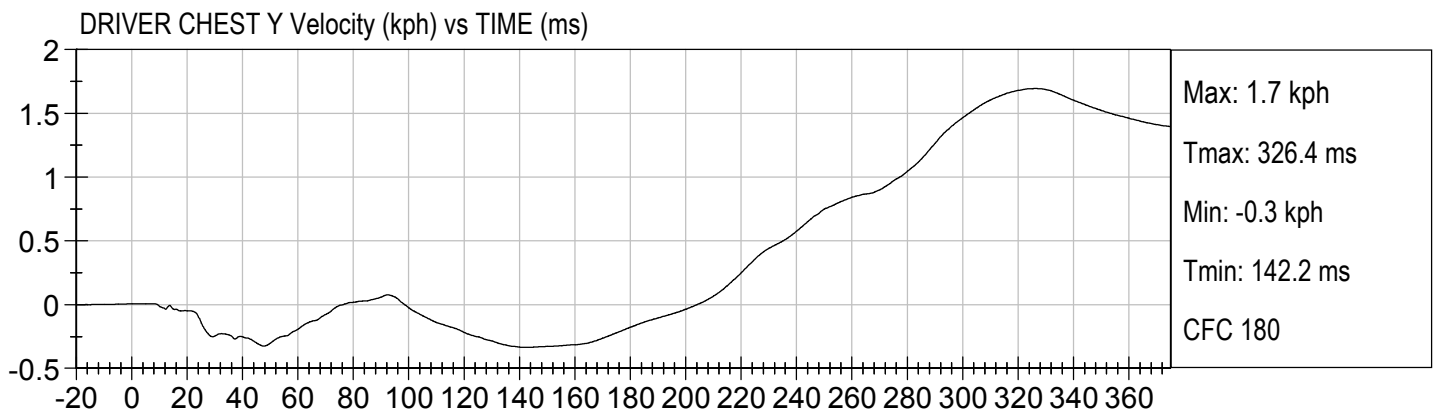
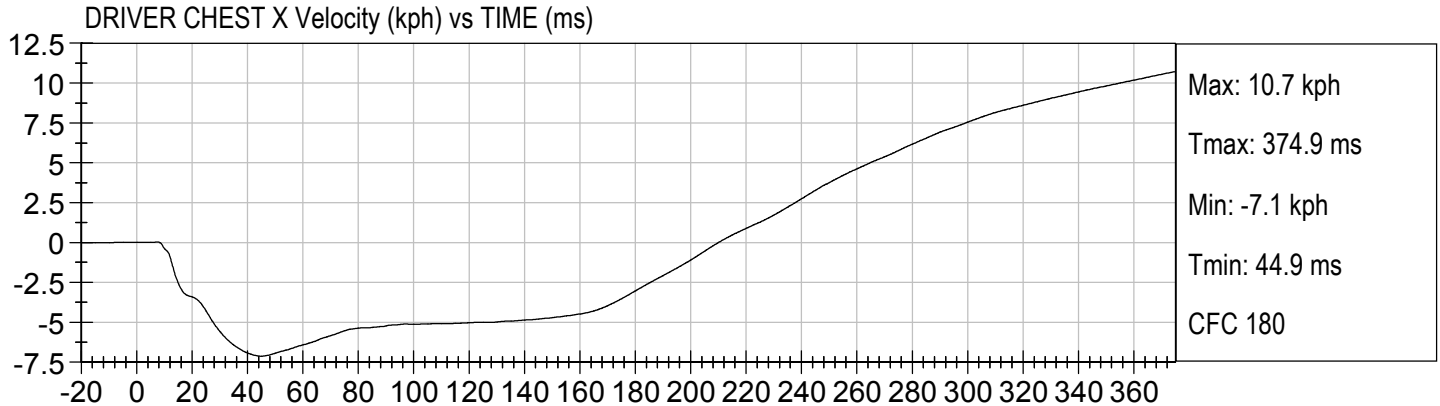


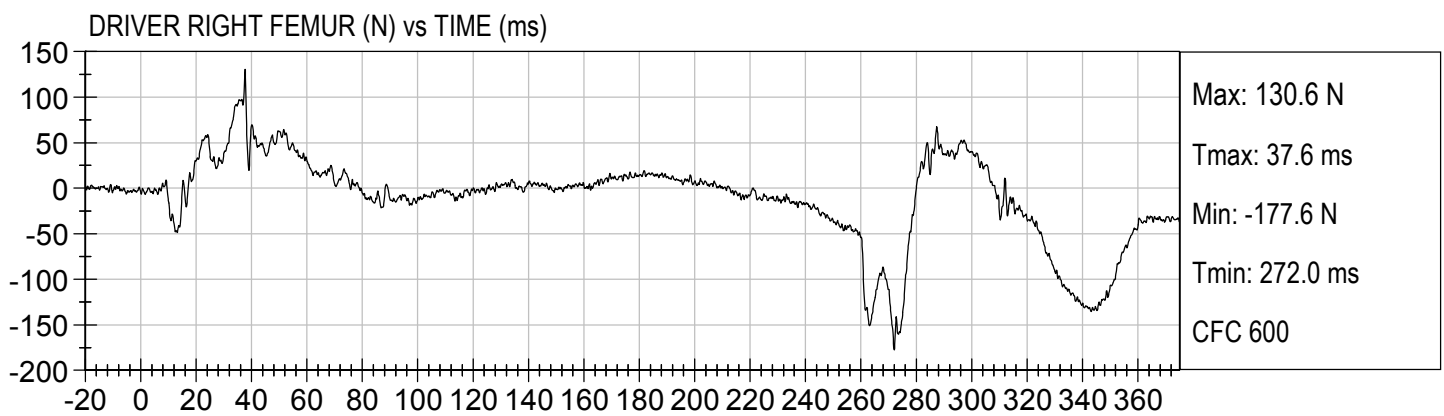
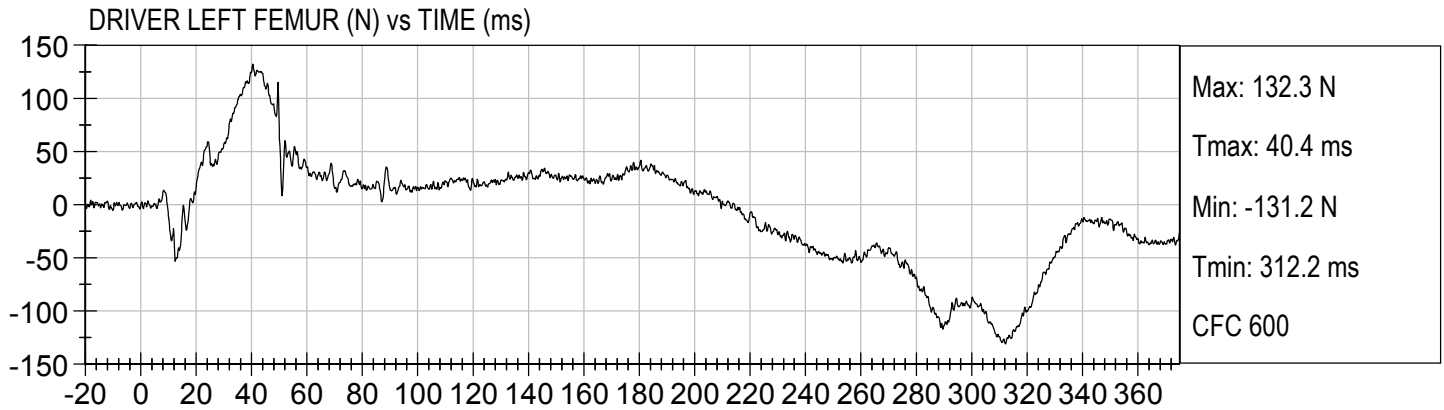




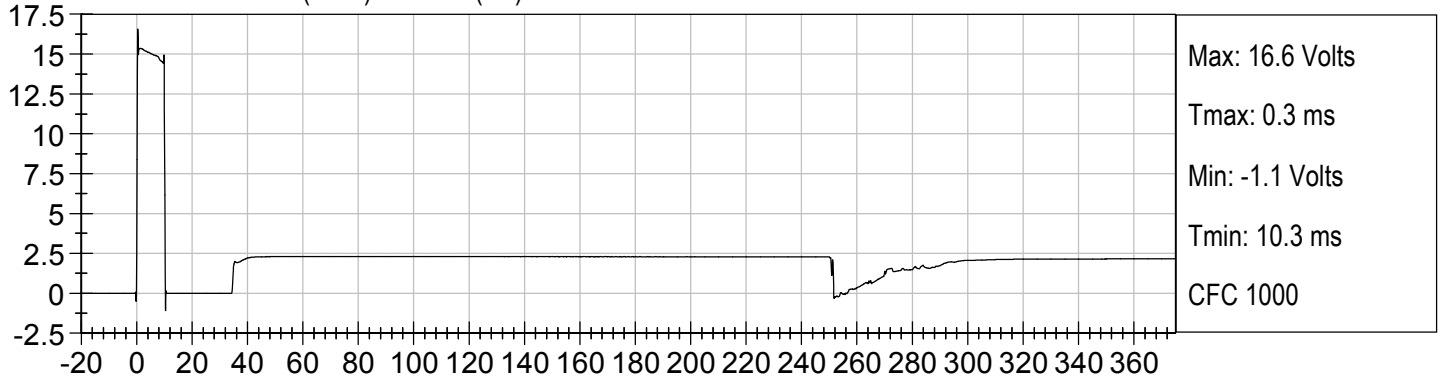




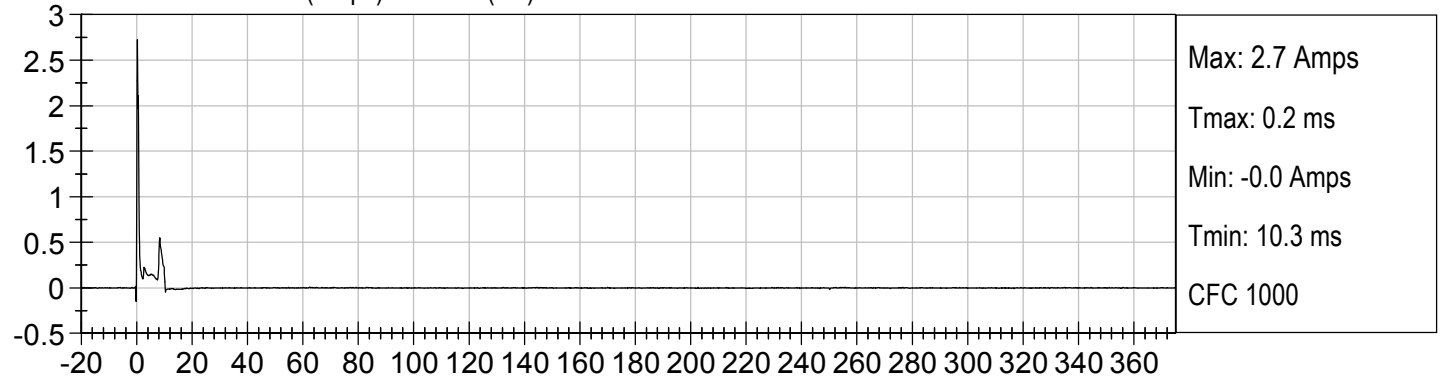




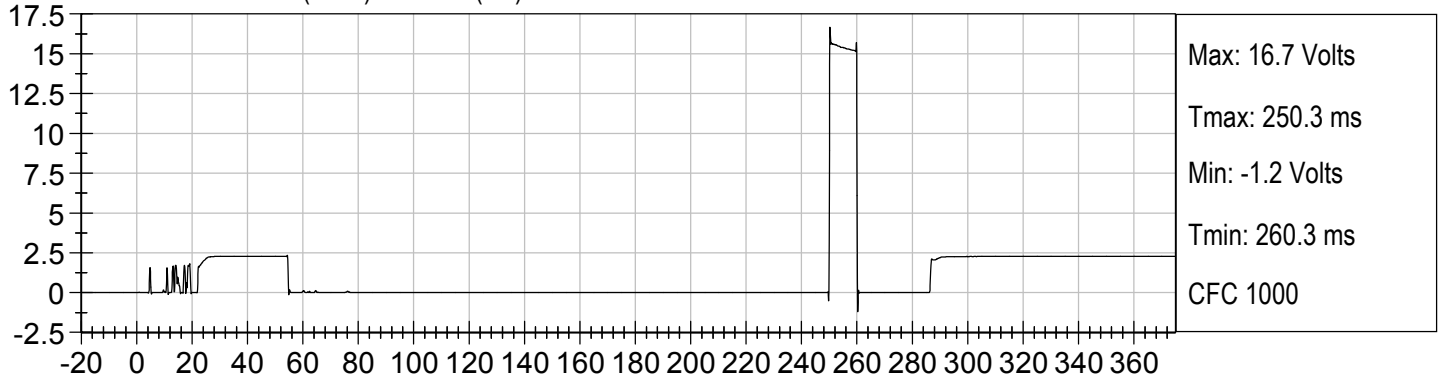
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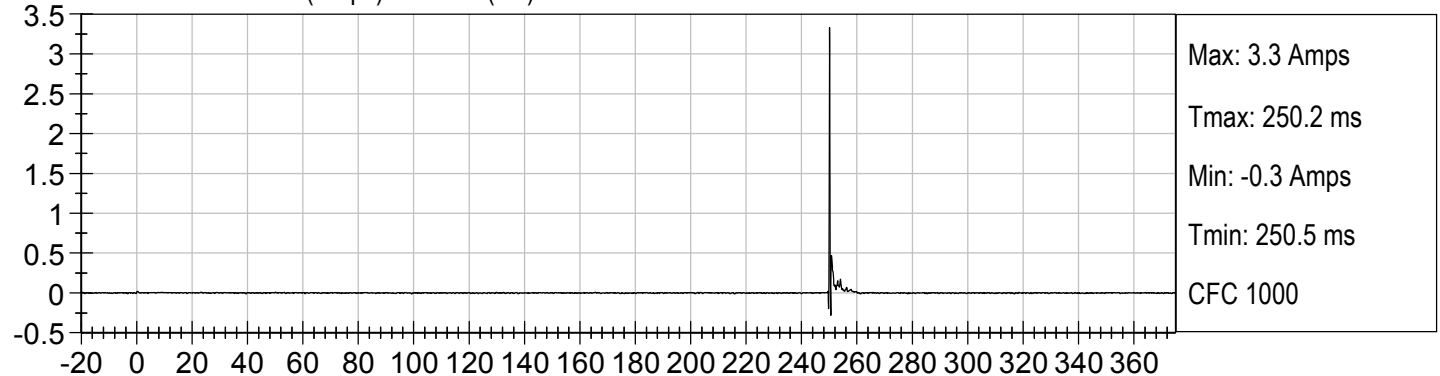
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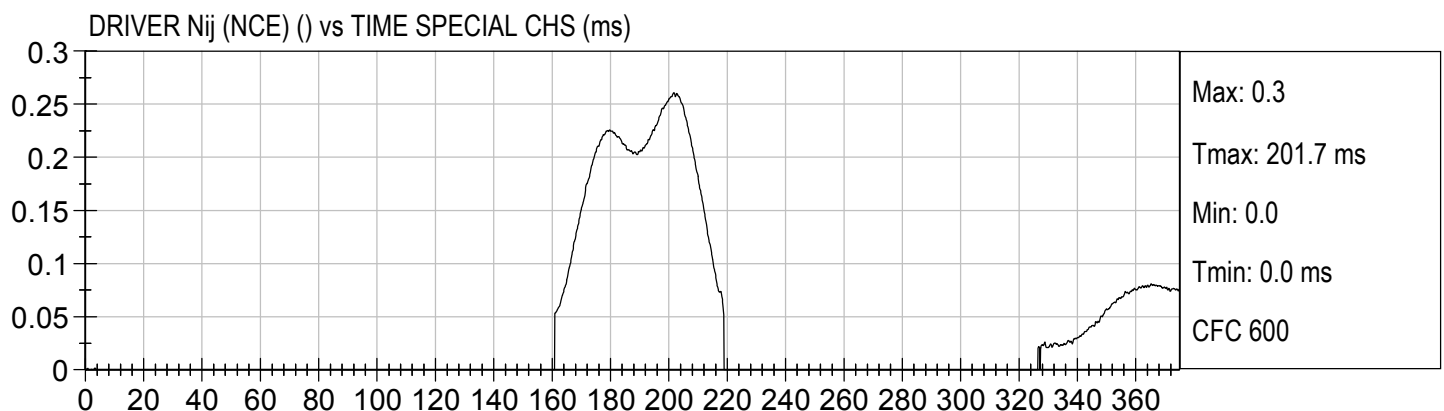
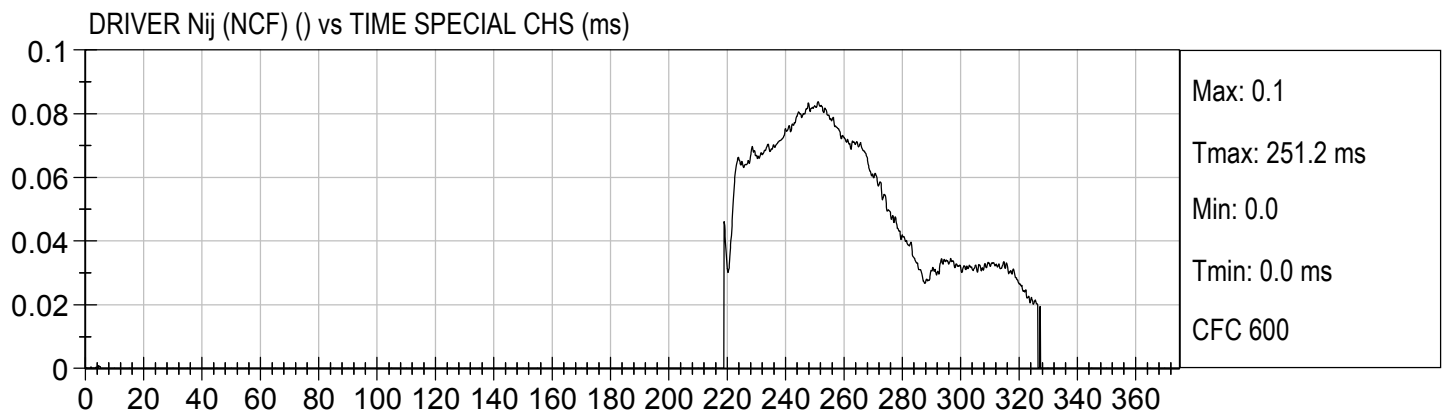
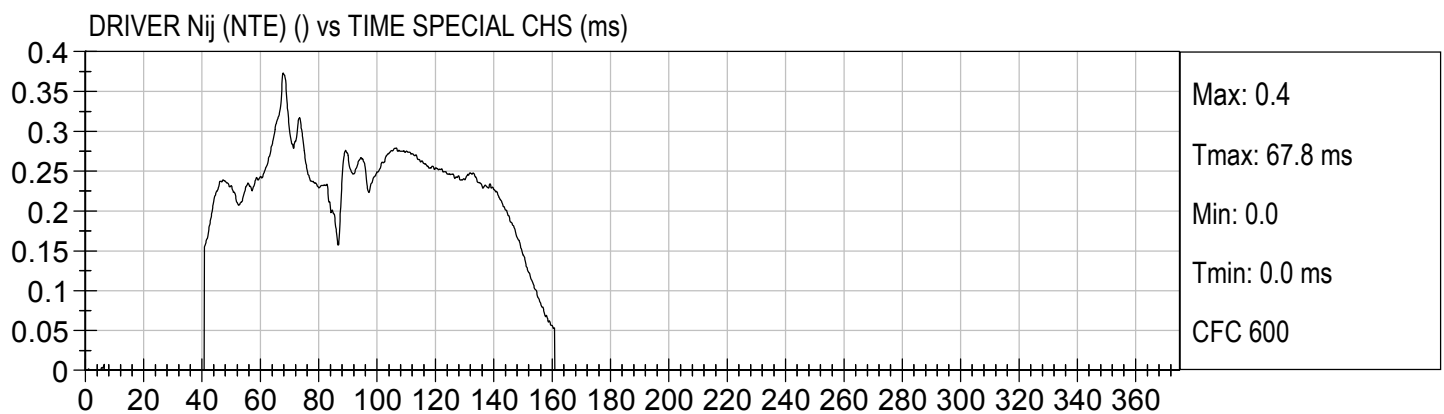
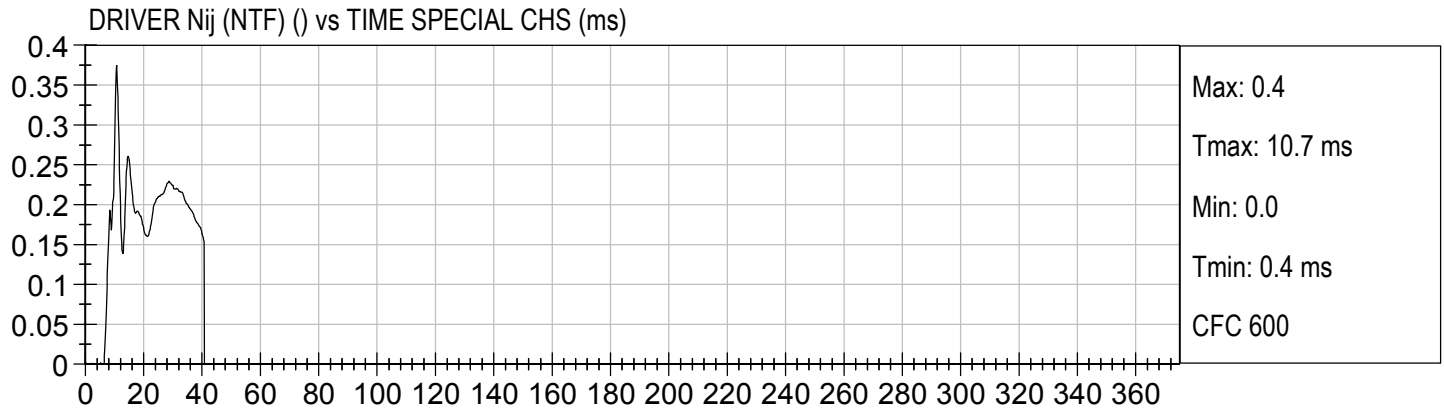


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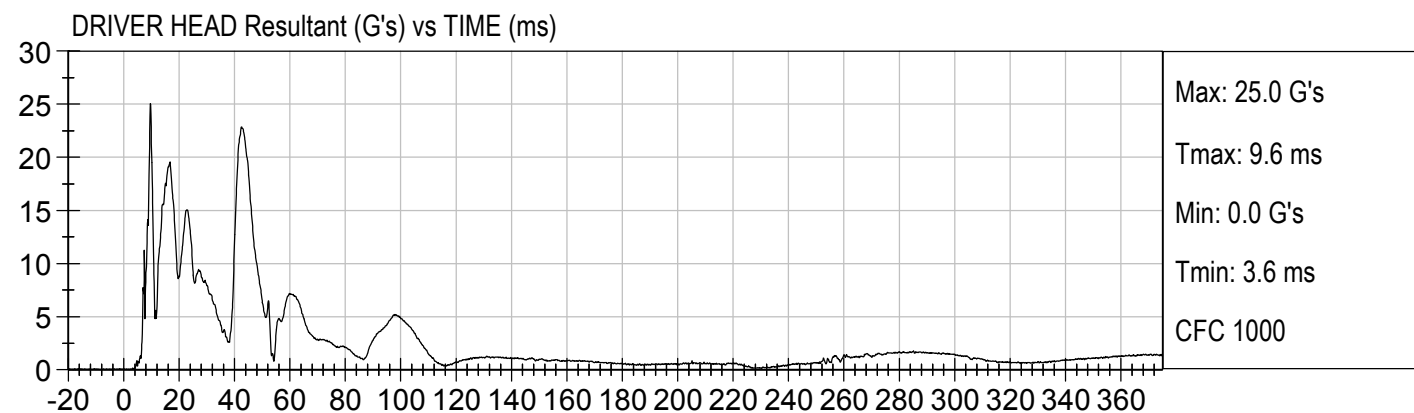
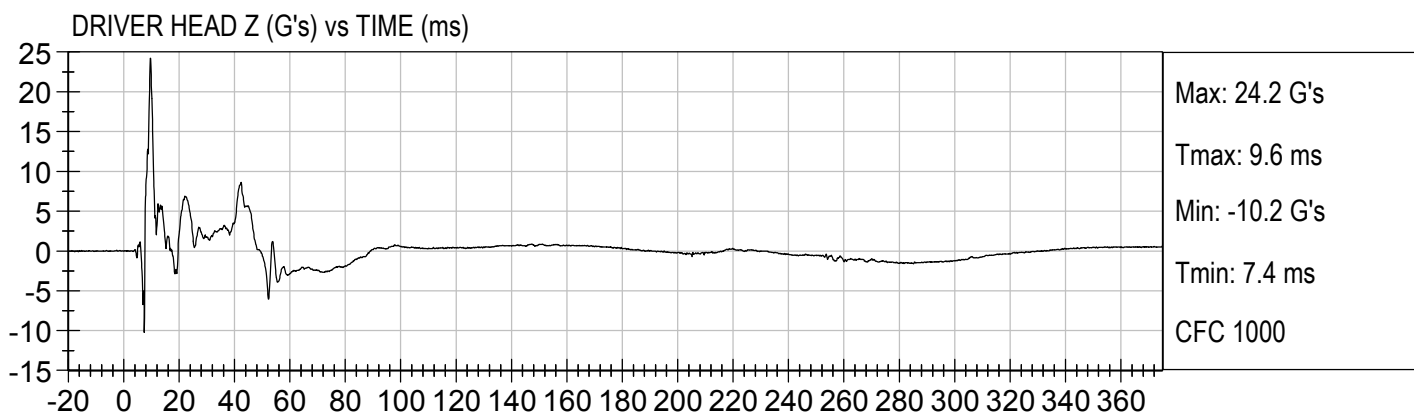
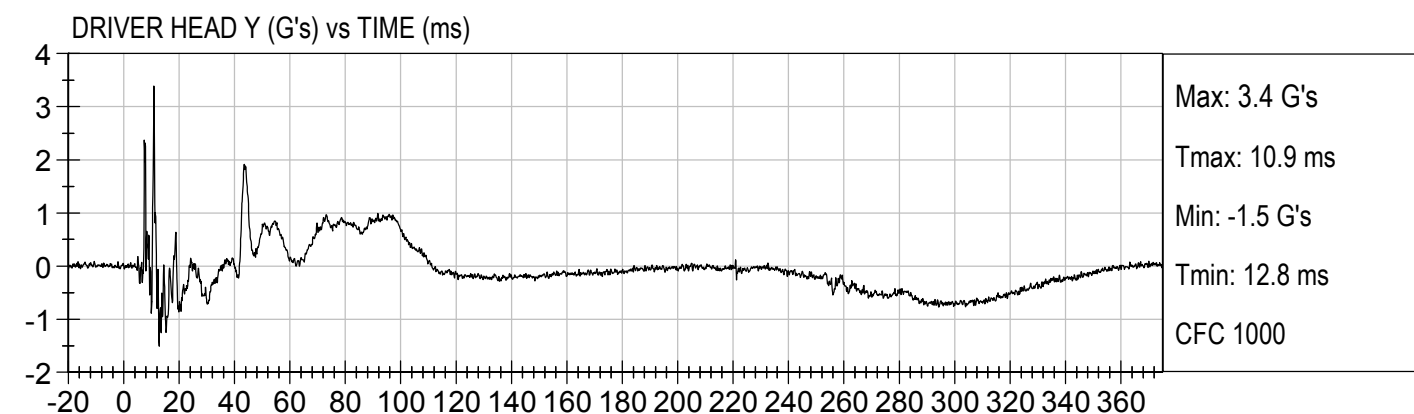
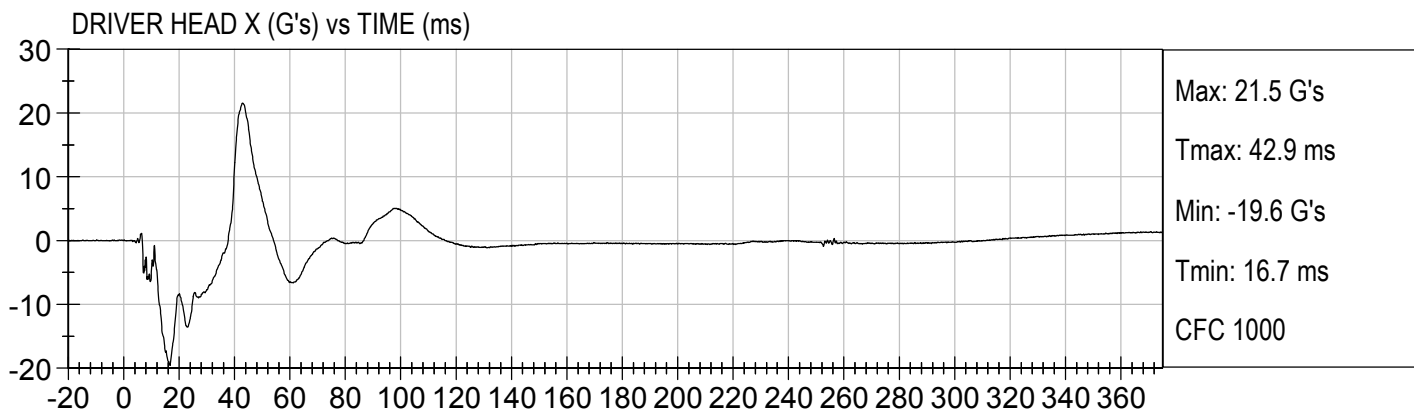


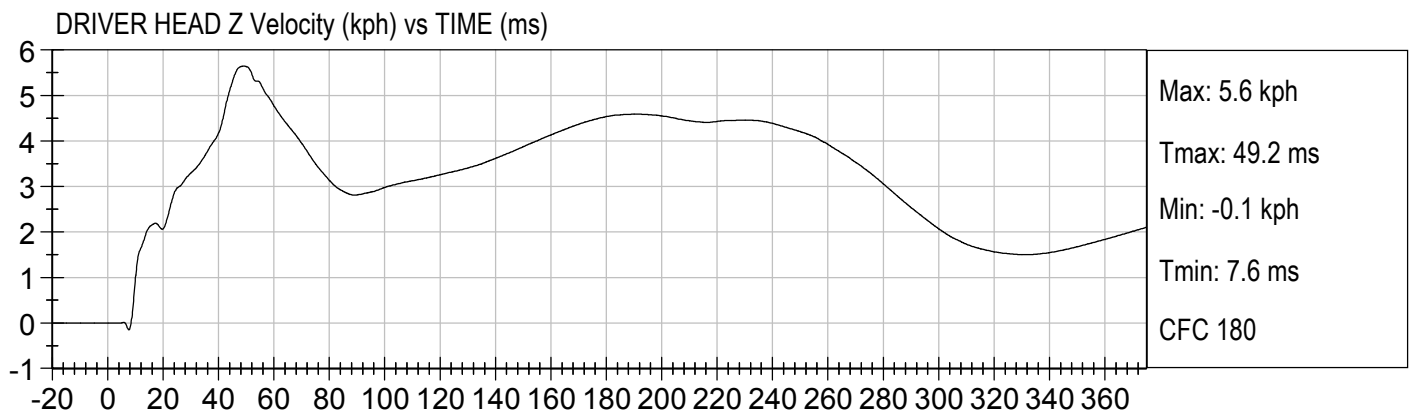
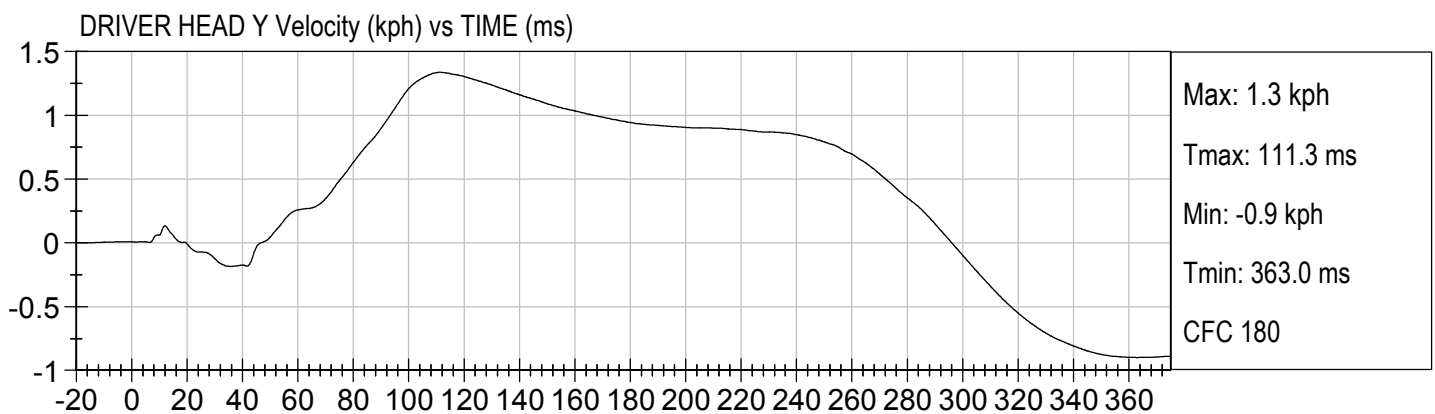
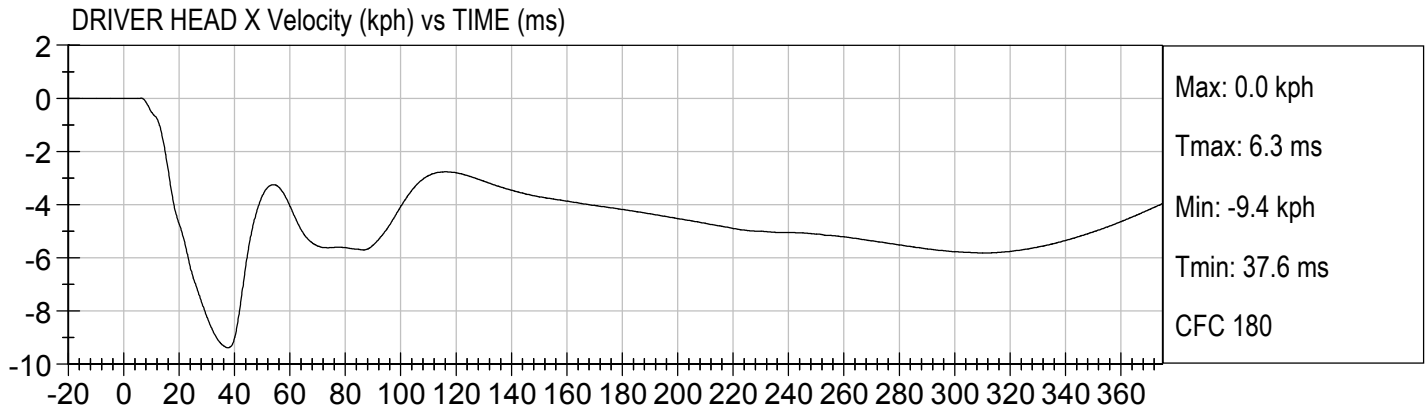
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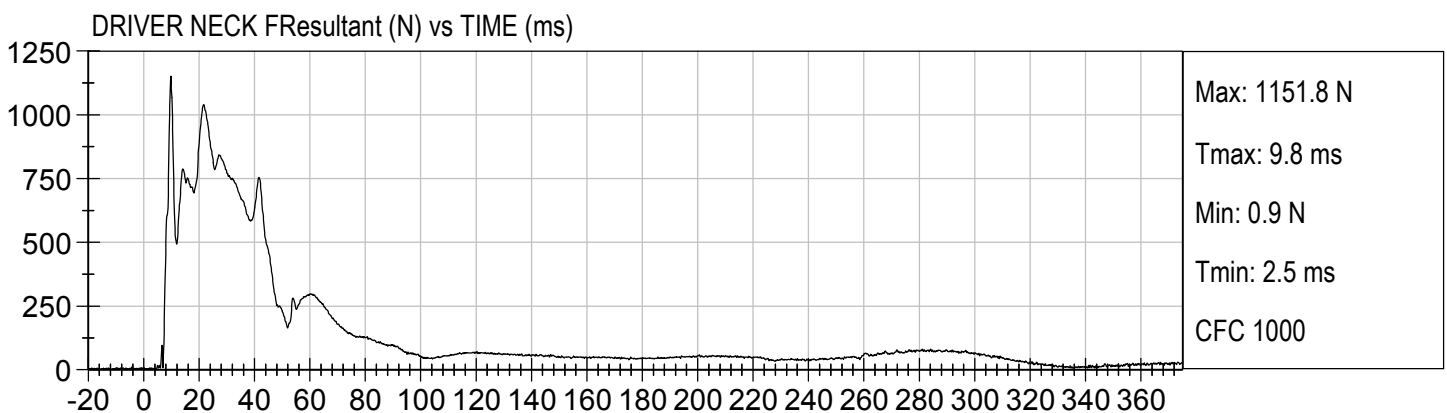
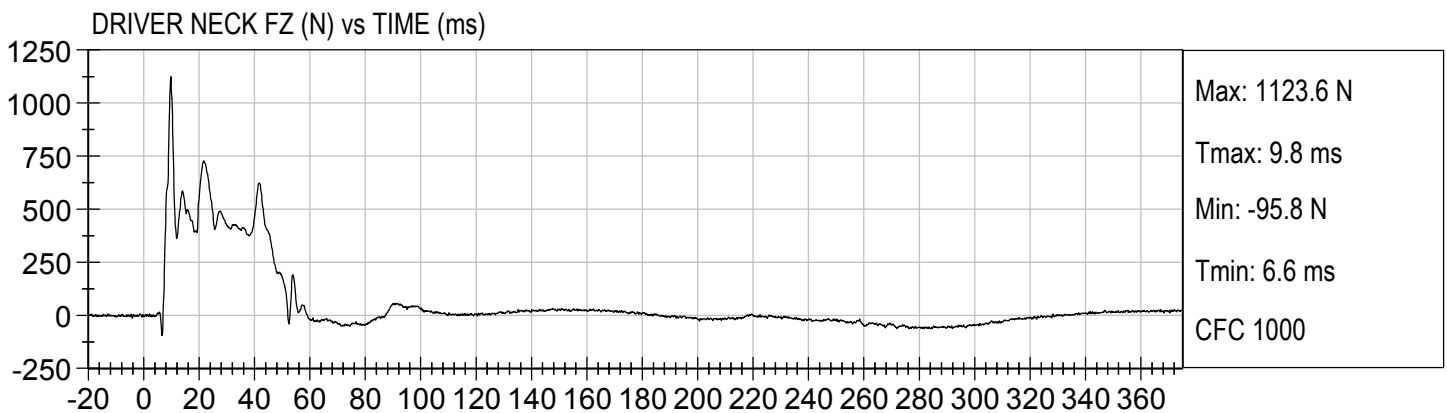
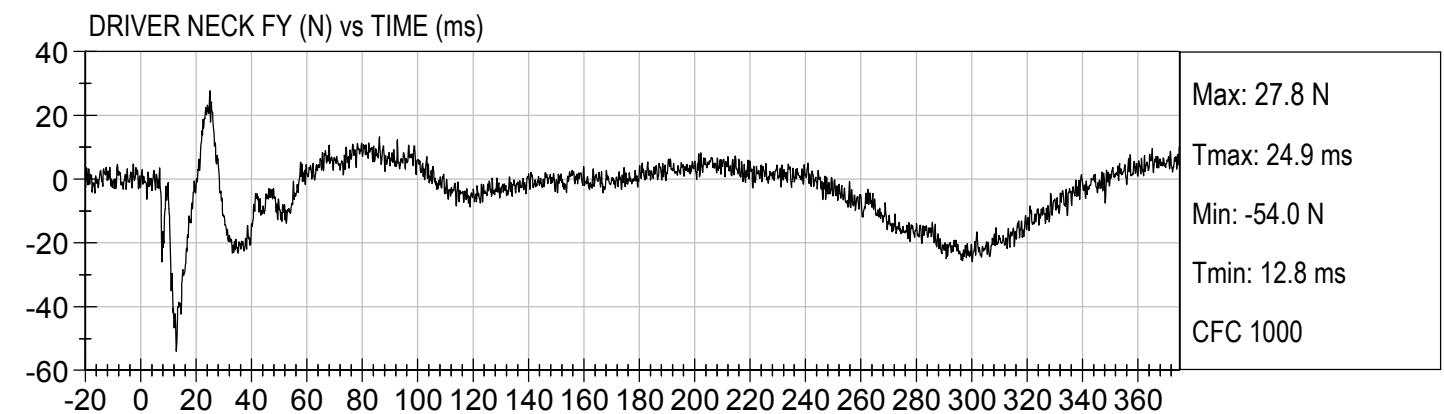
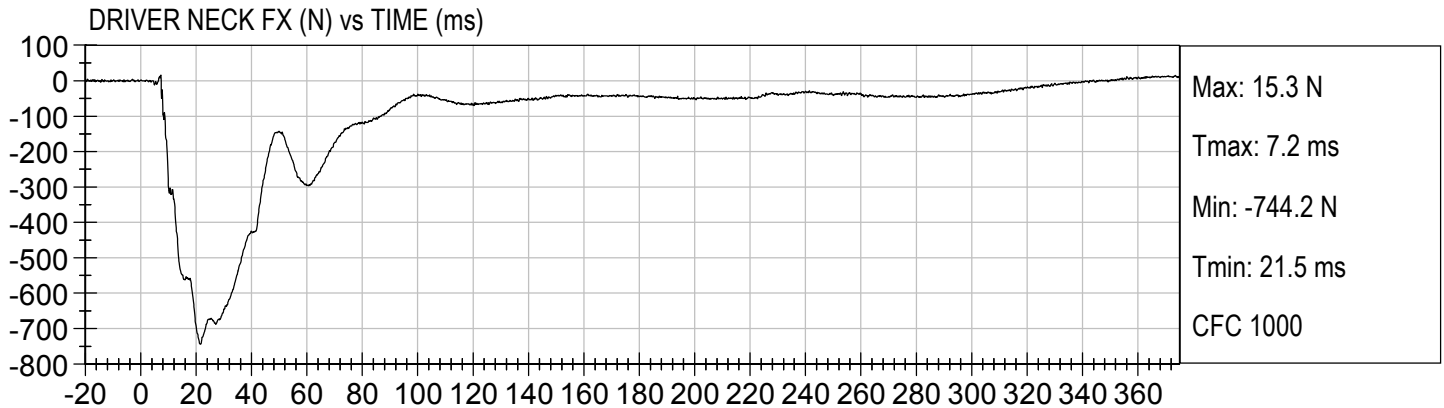




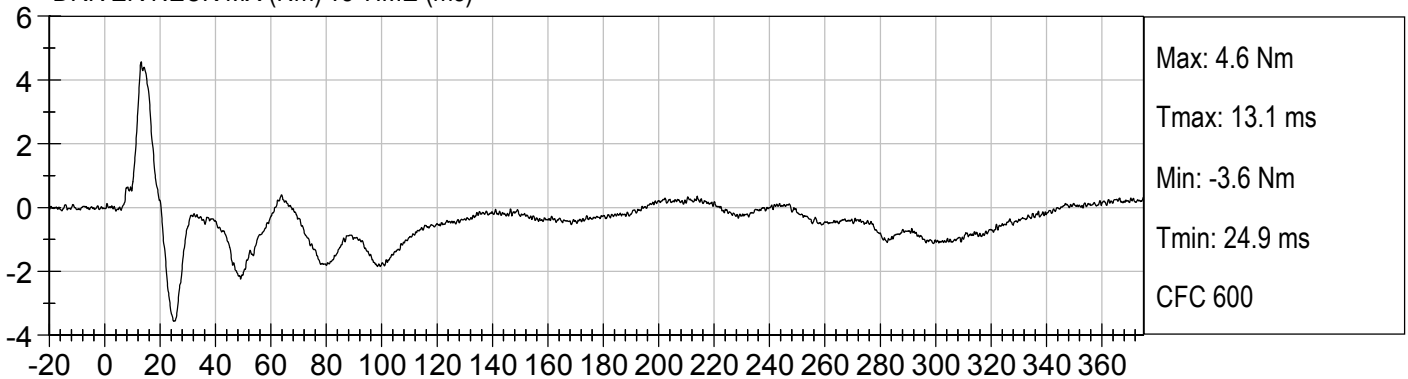




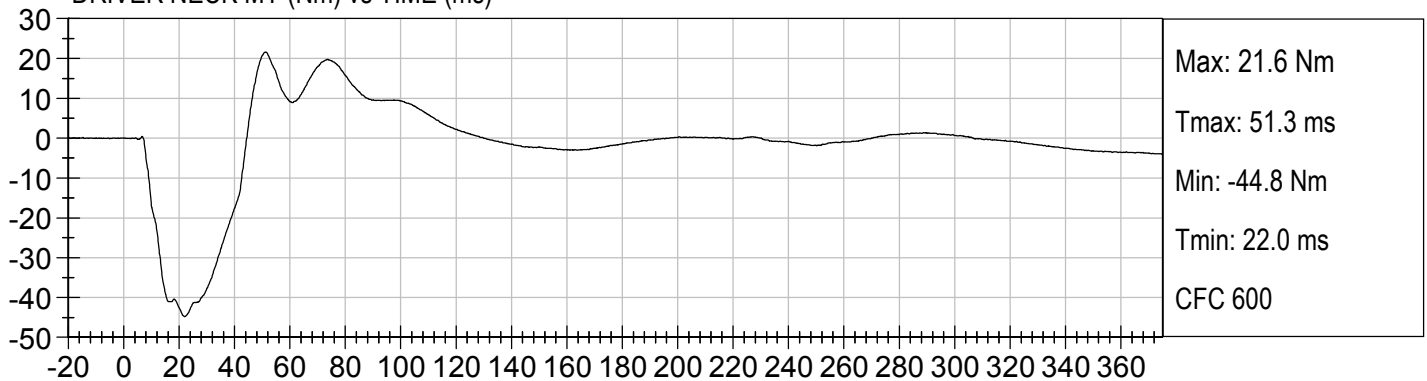




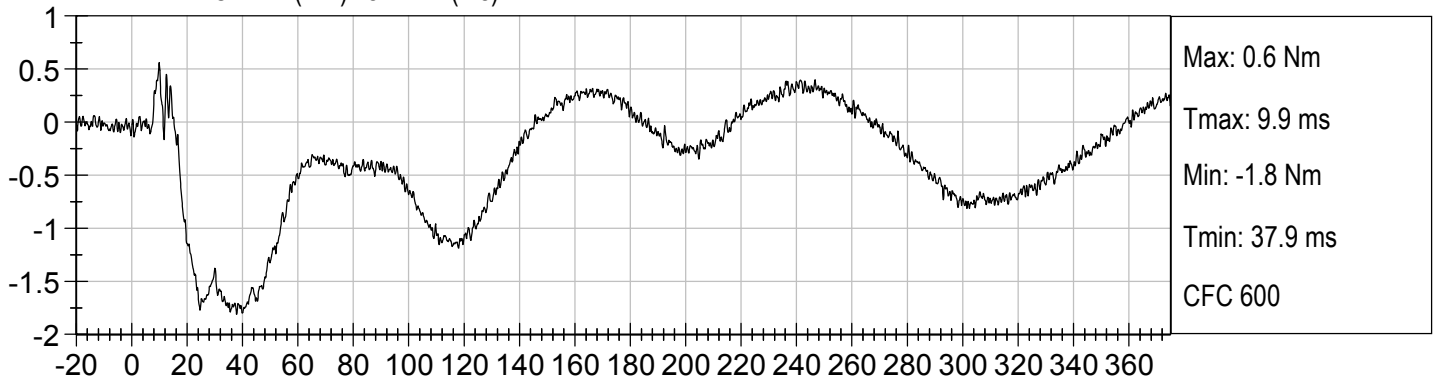
DRIVER NECK MX (Nm) vs TIME (ms)



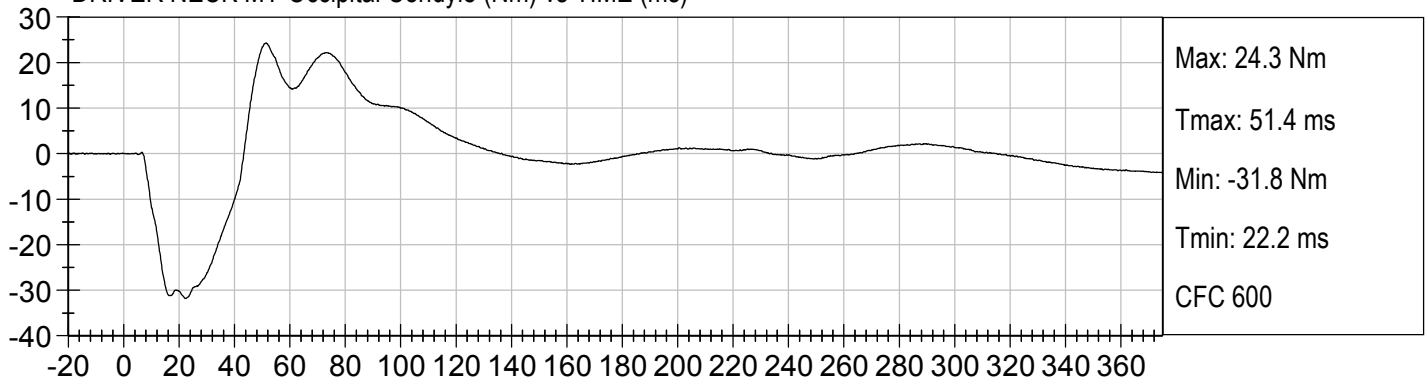
DRIVER NECK MY (Nm) vs TIME (ms)

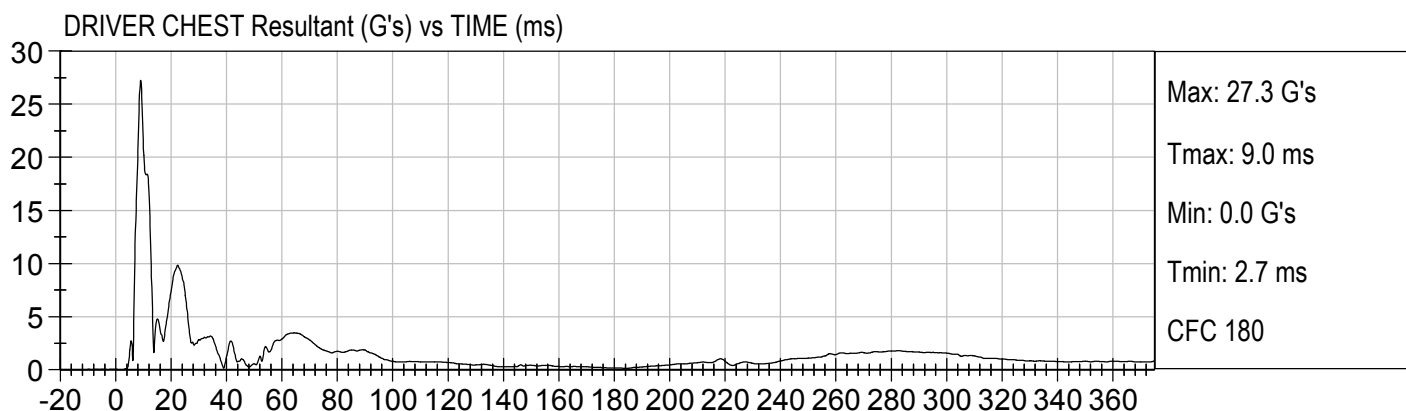
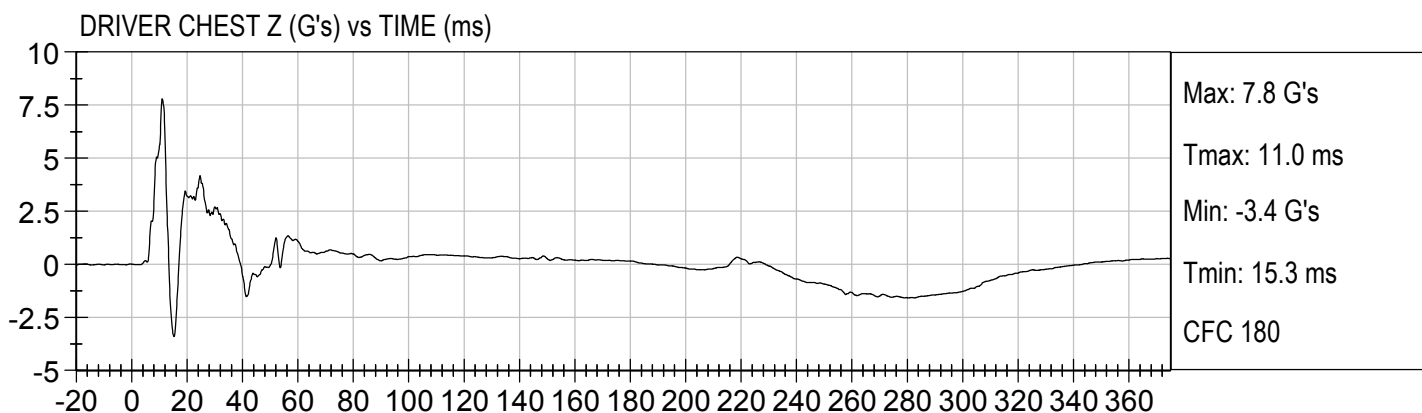
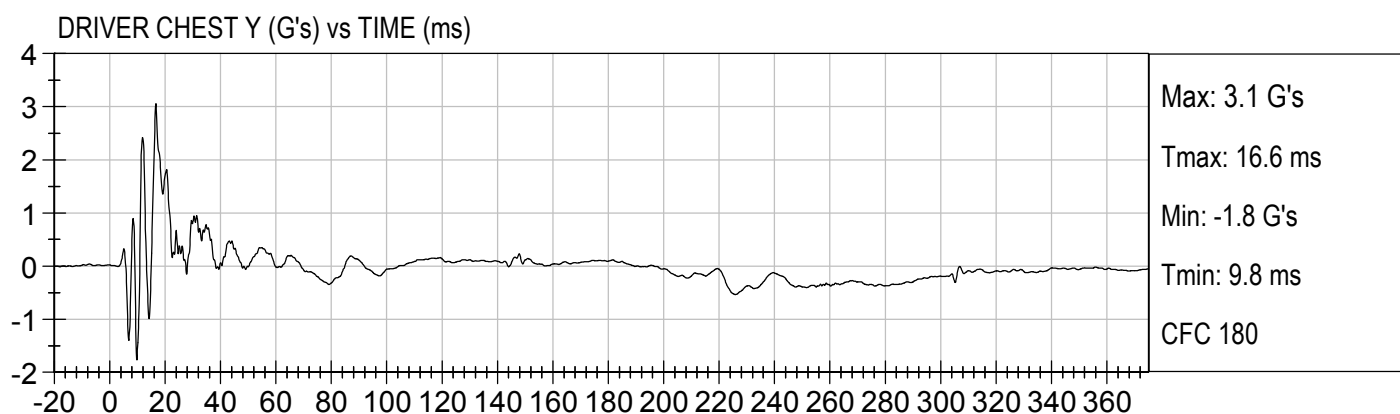
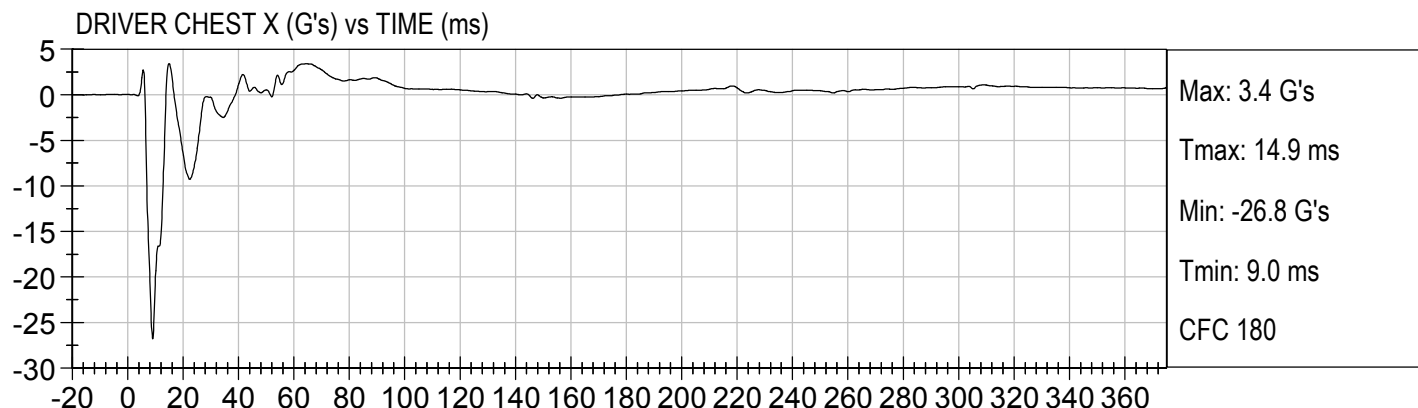


DRIVER NECK MZ (Nm) vs TIME (ms)

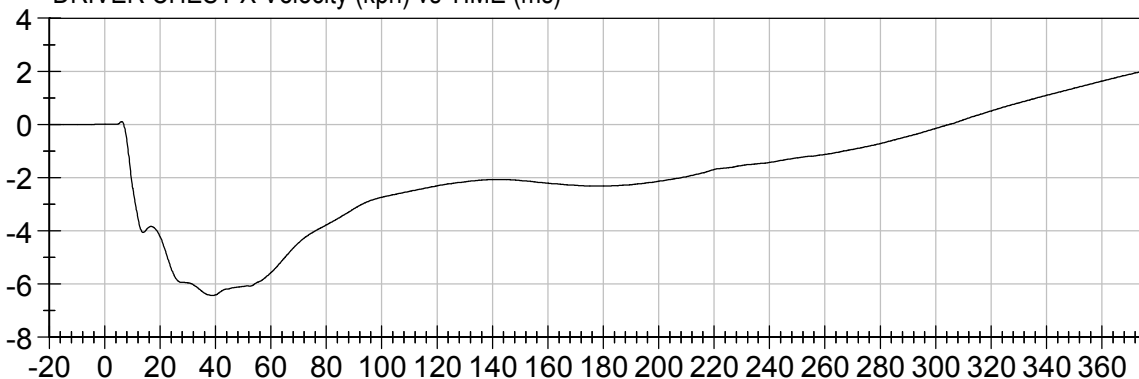


DRIVER NECK MY Occipital Condyle (Nm) vs TIME (ms)

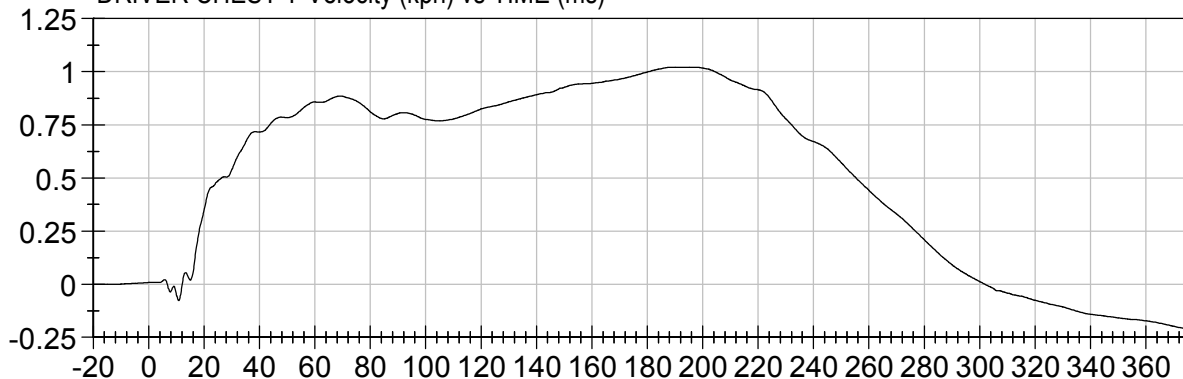




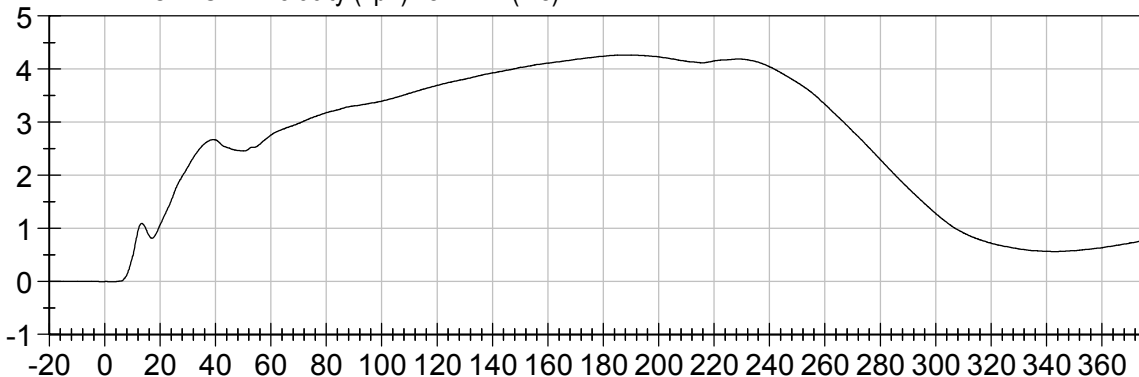
DRIVER CHEST X Velocity (kph) vs TIME (ms)



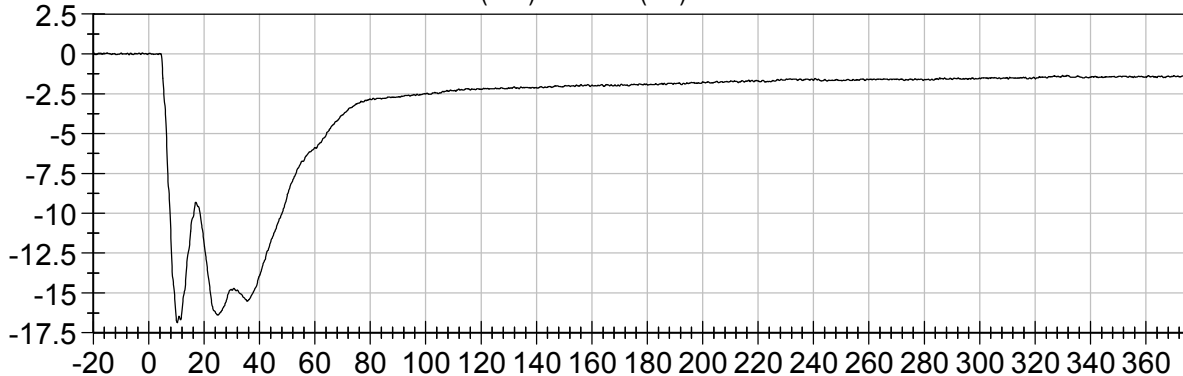
DRIVER CHEST Y Velocity (kph) vs TIME (ms)

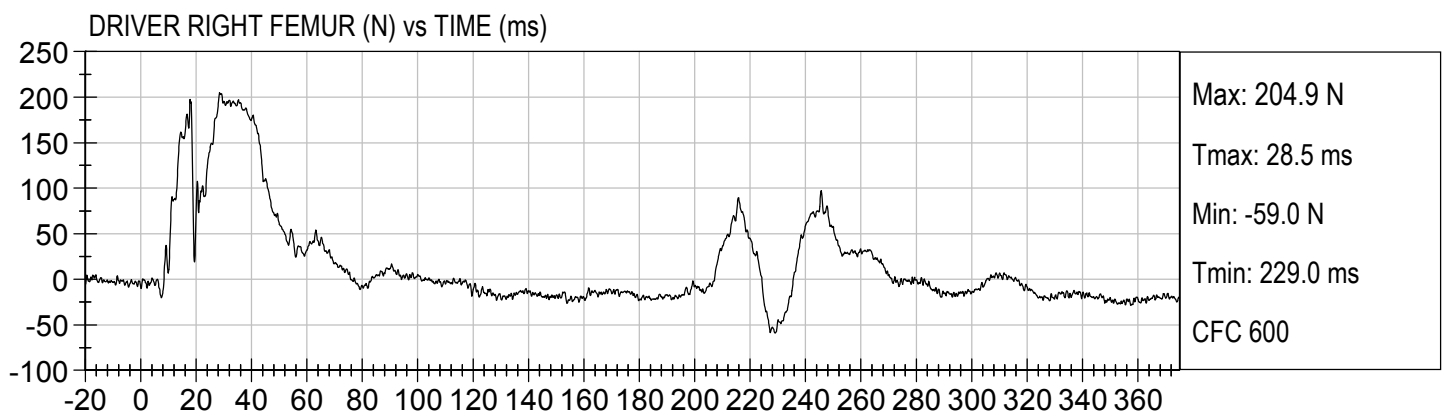
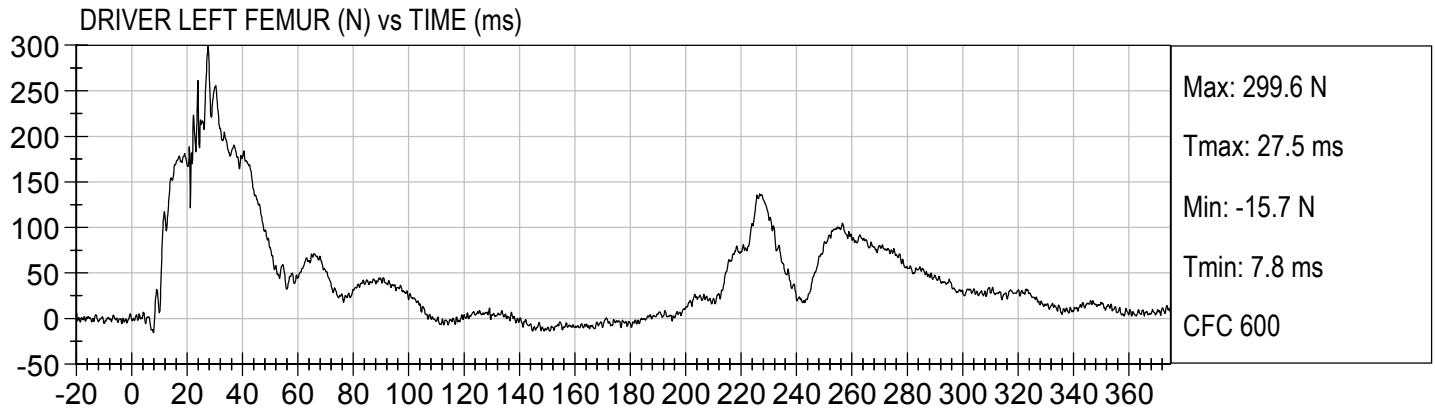


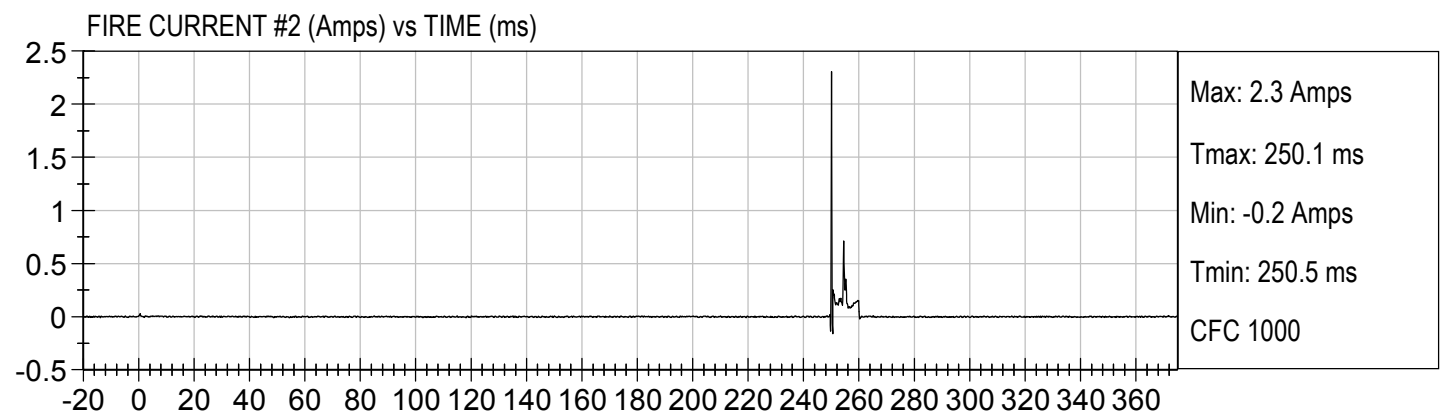
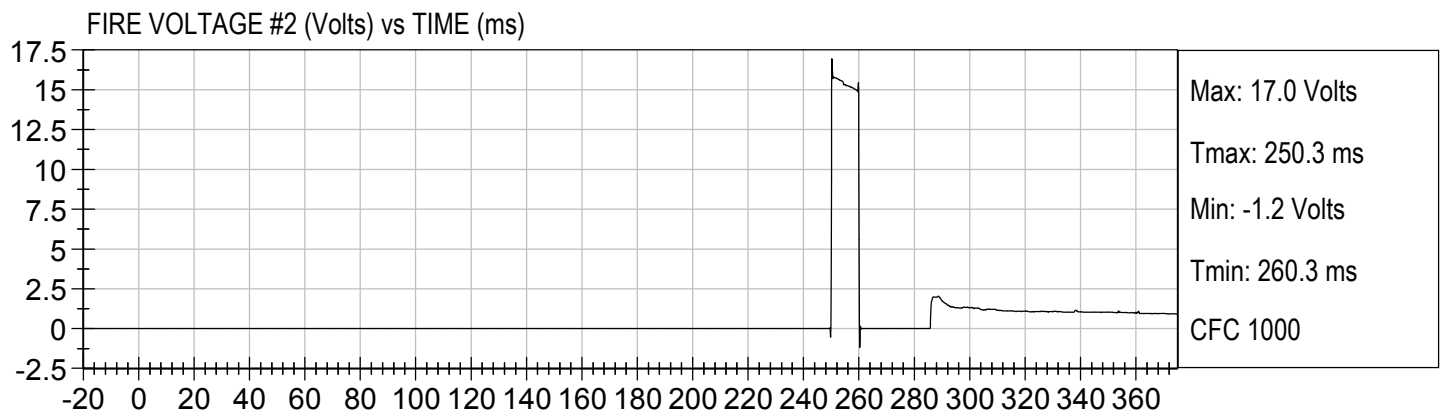
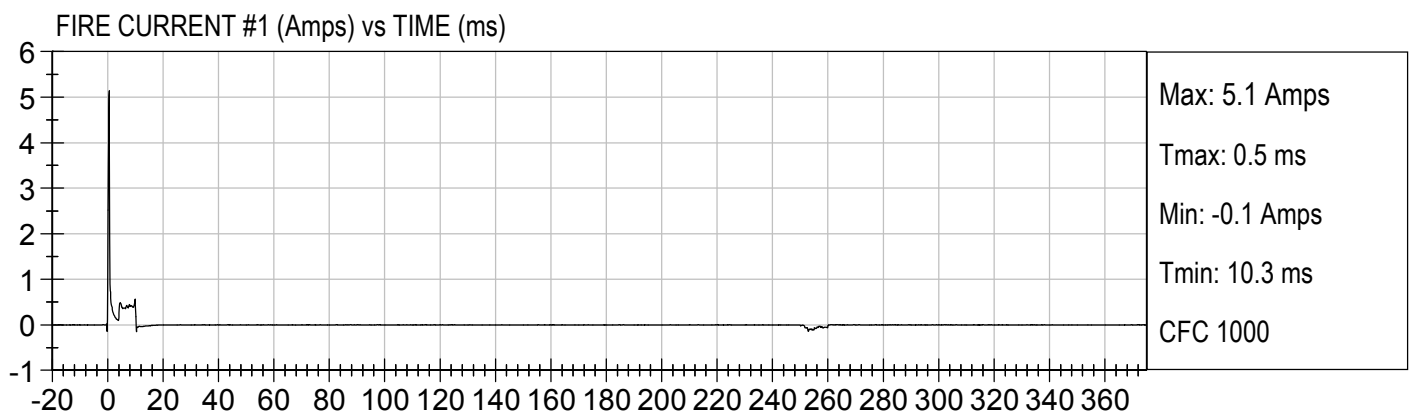
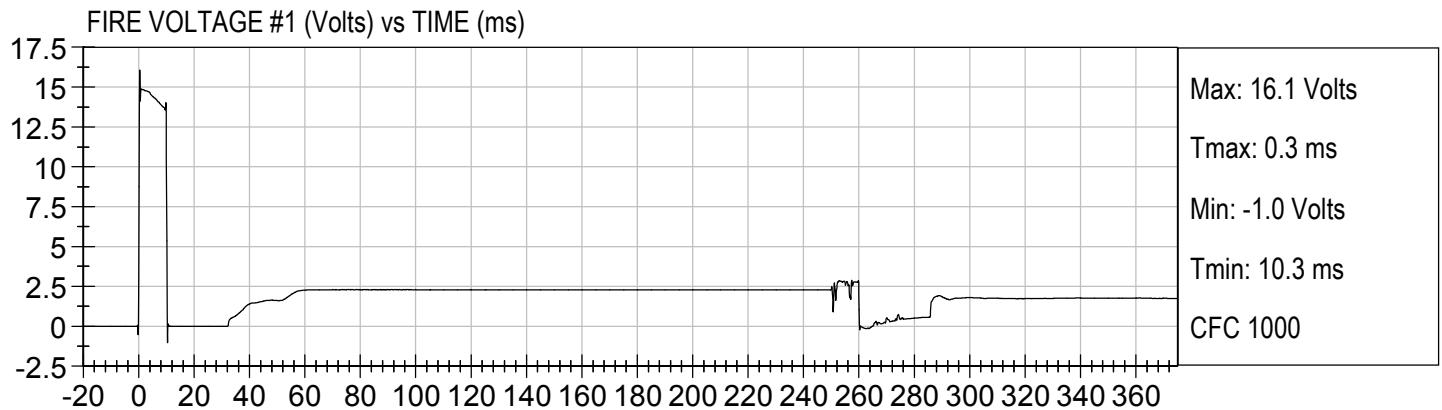
DRIVER CHEST Z Velocity (kph) vs TIME (ms)



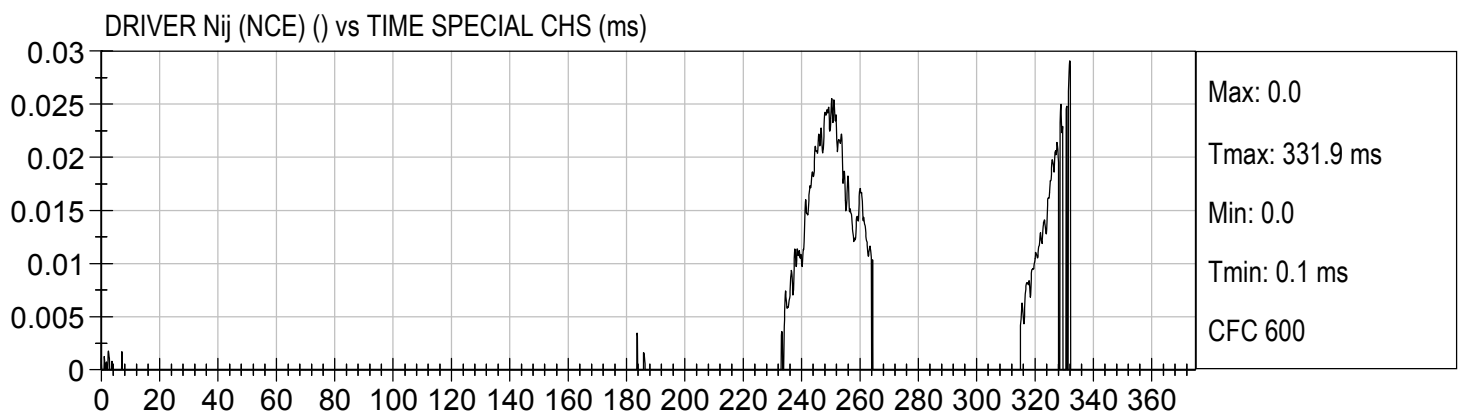
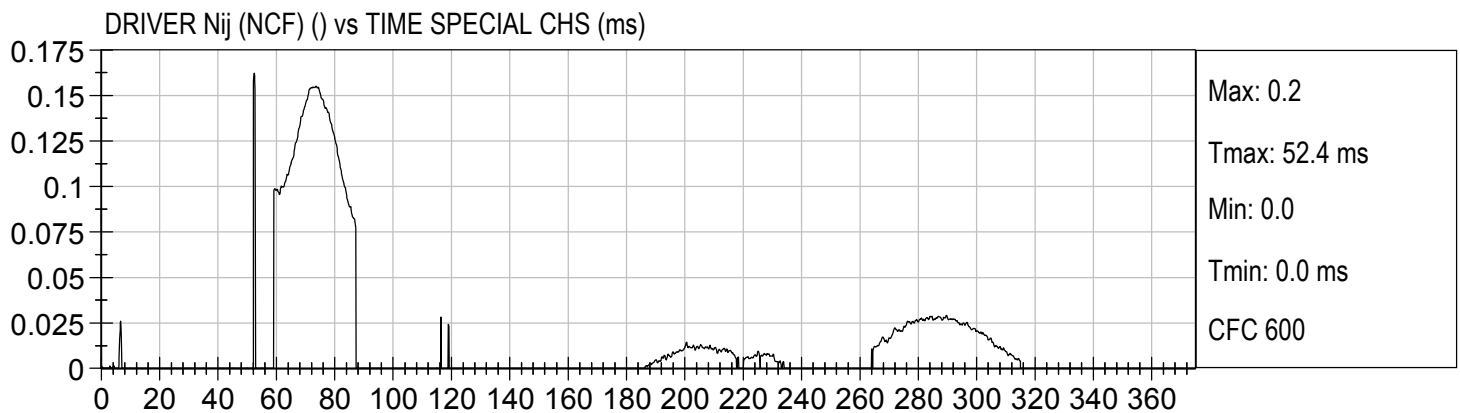
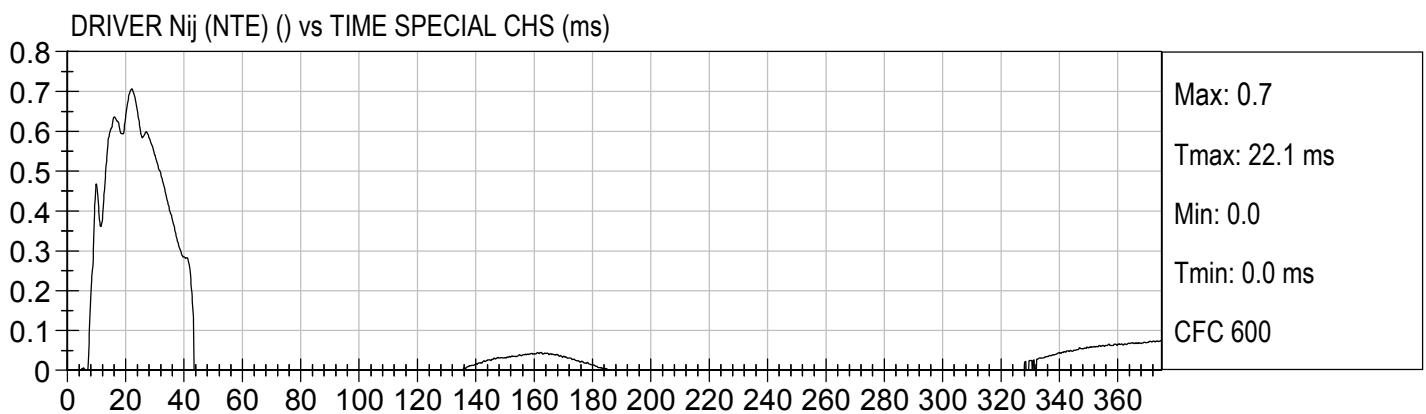
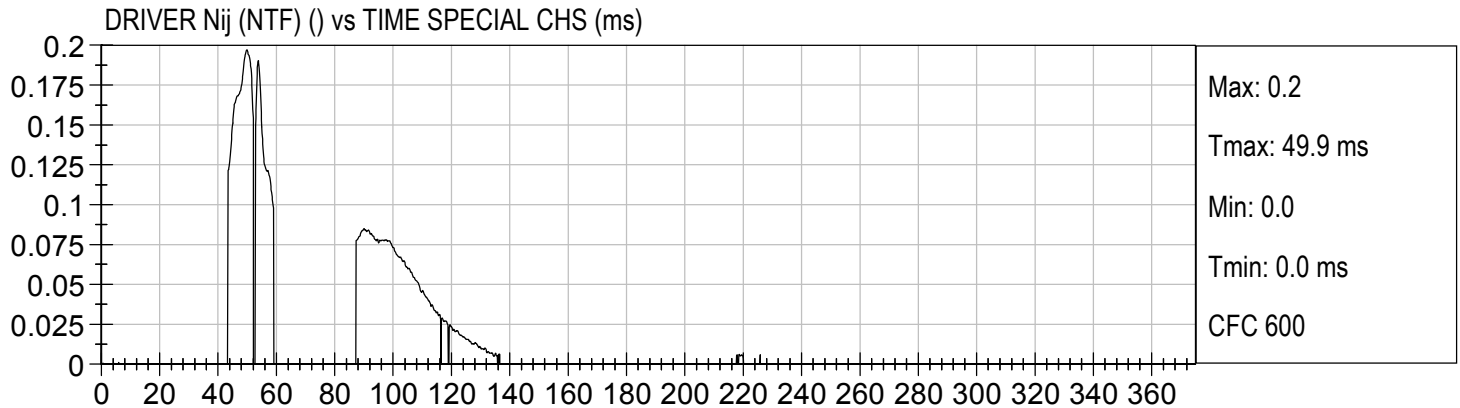
DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)



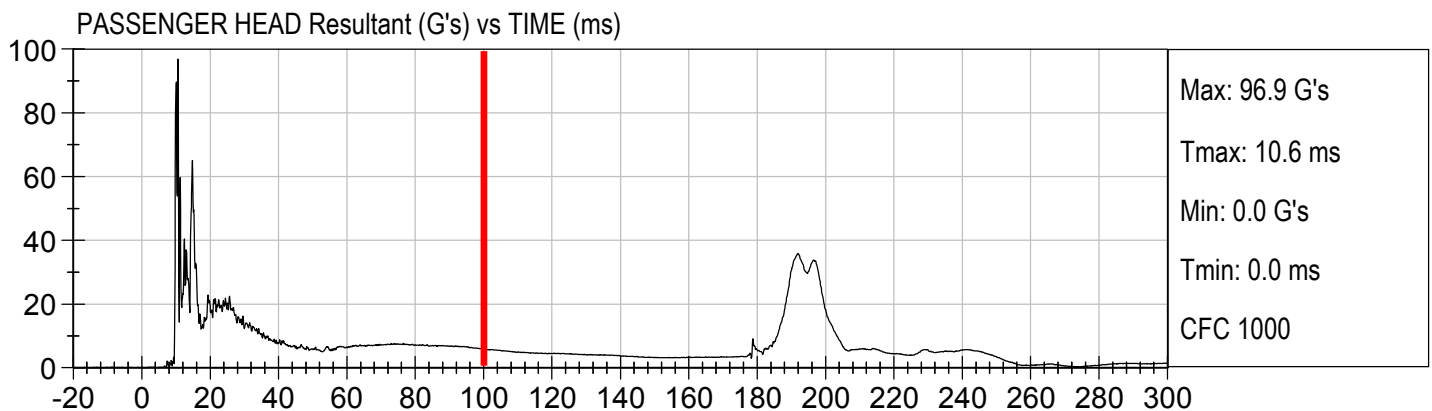
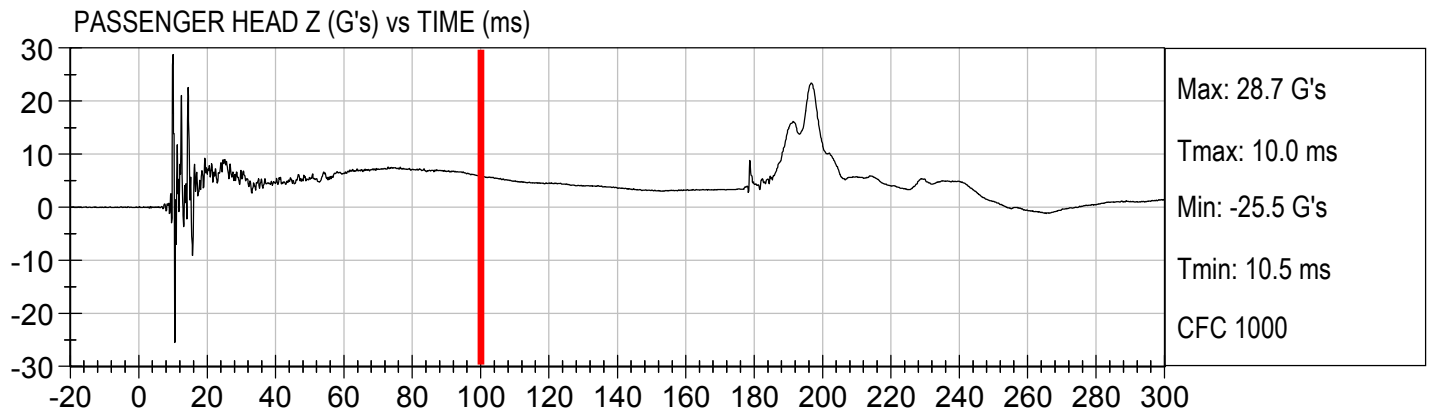
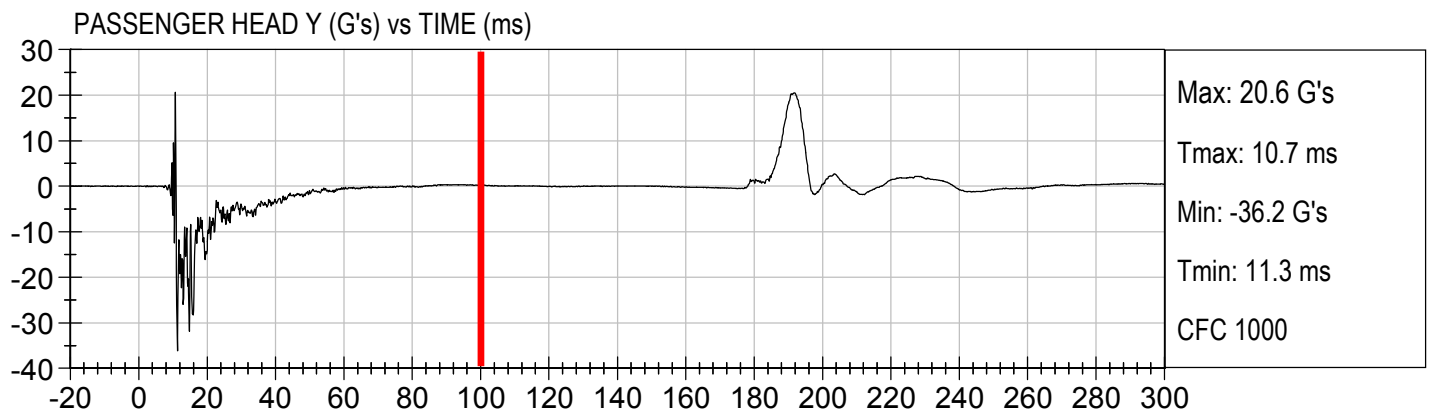
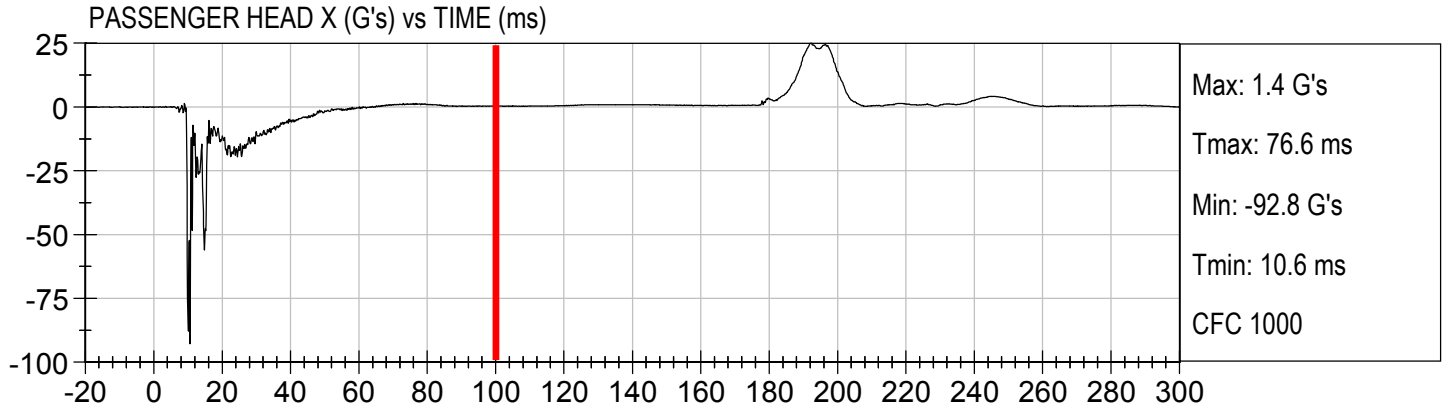




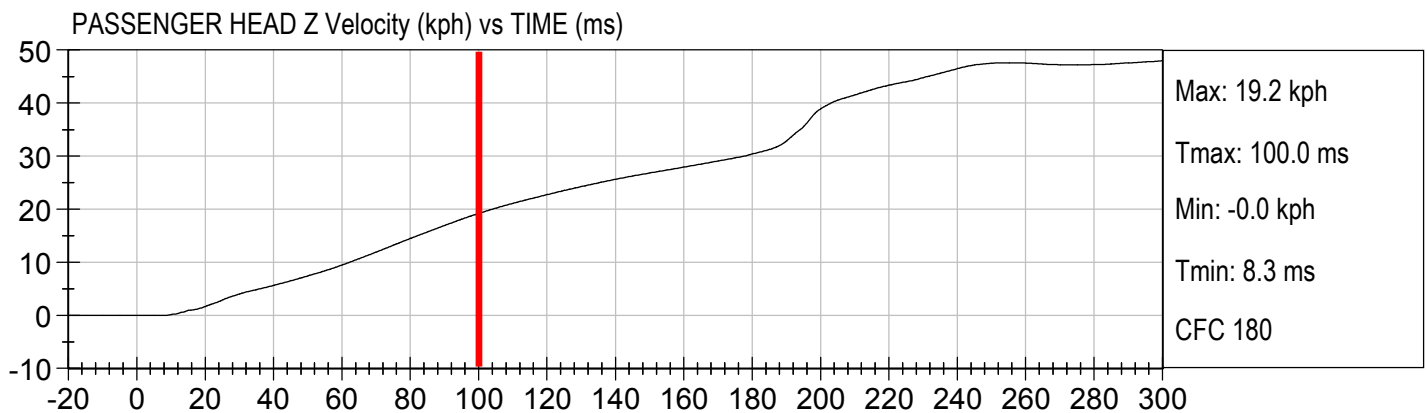
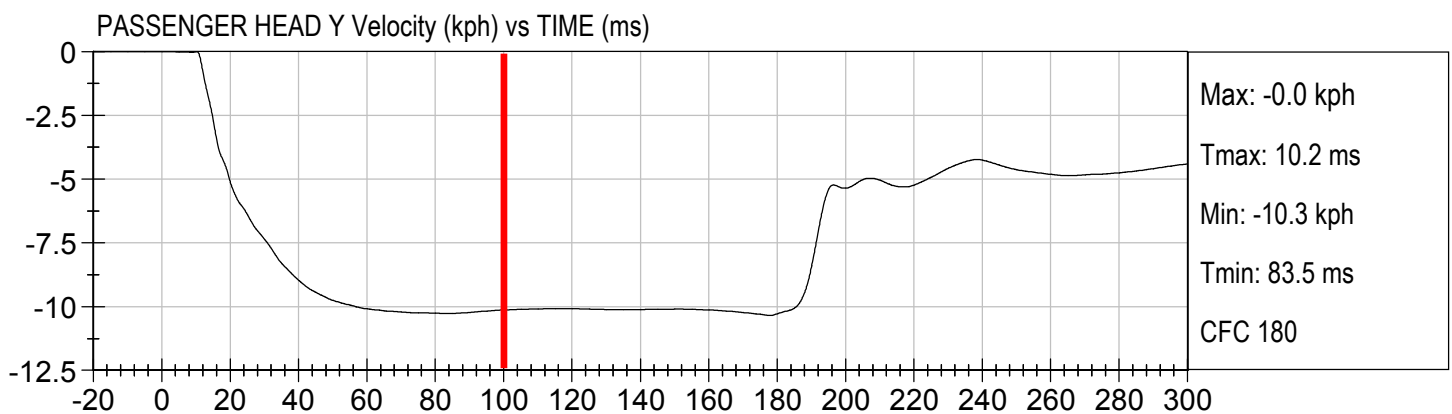
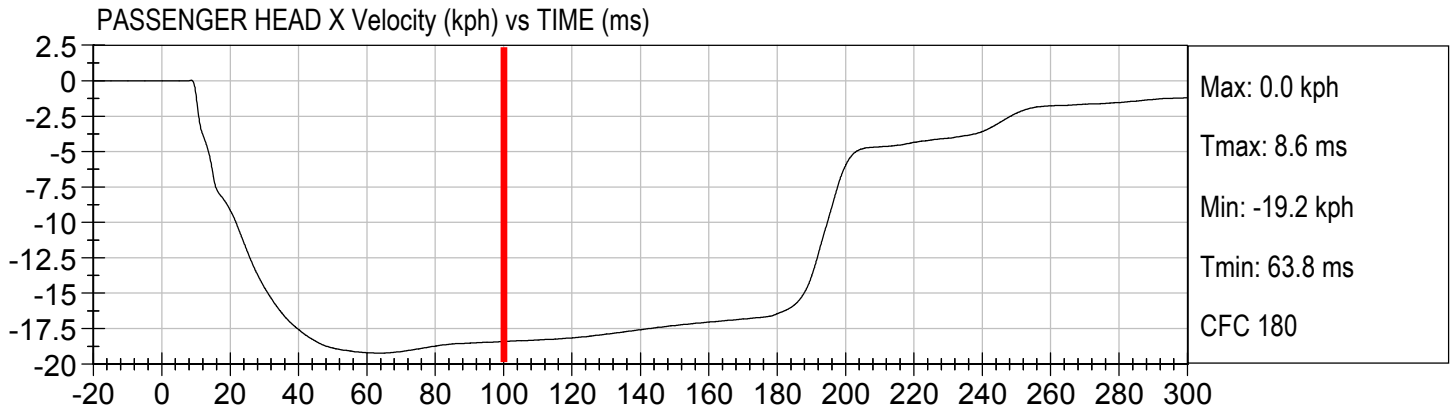




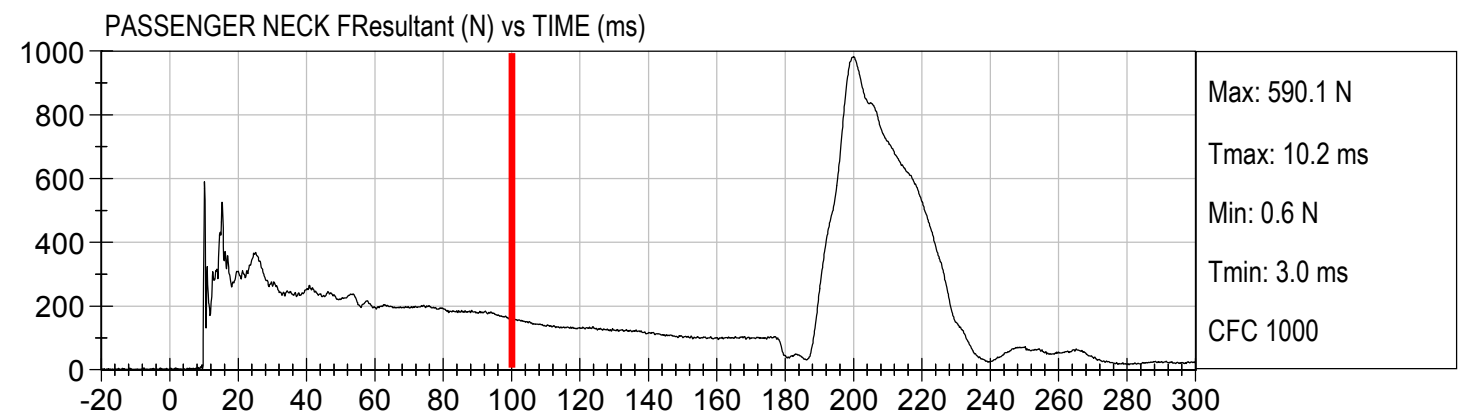
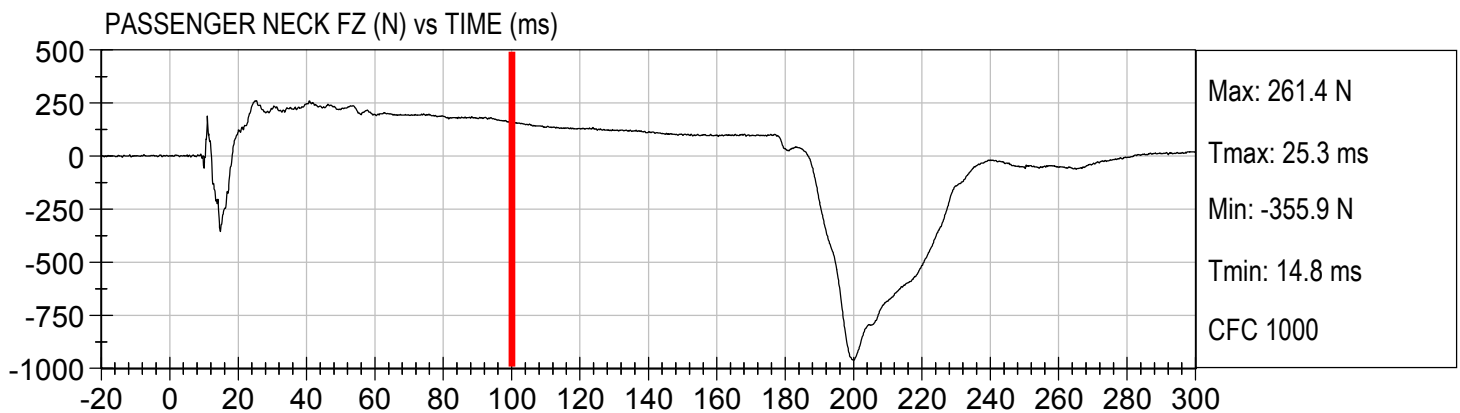
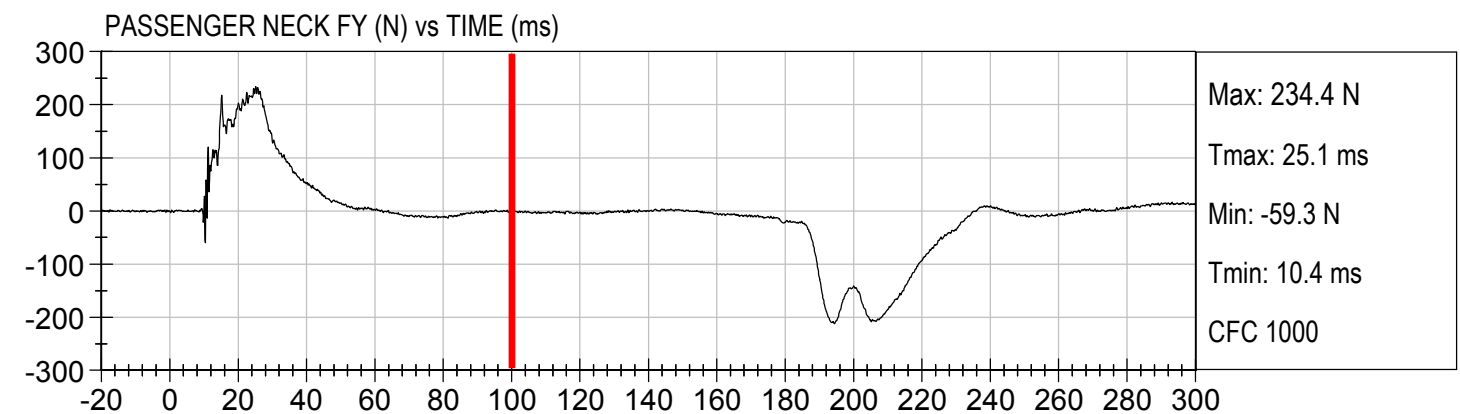
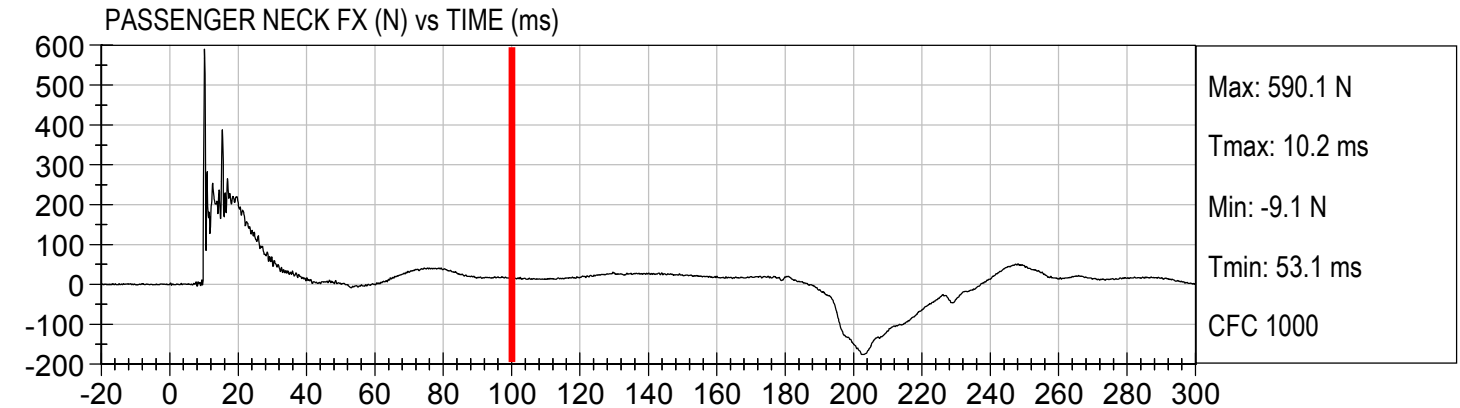
Injury Values Calculated between 0ms and 100ms



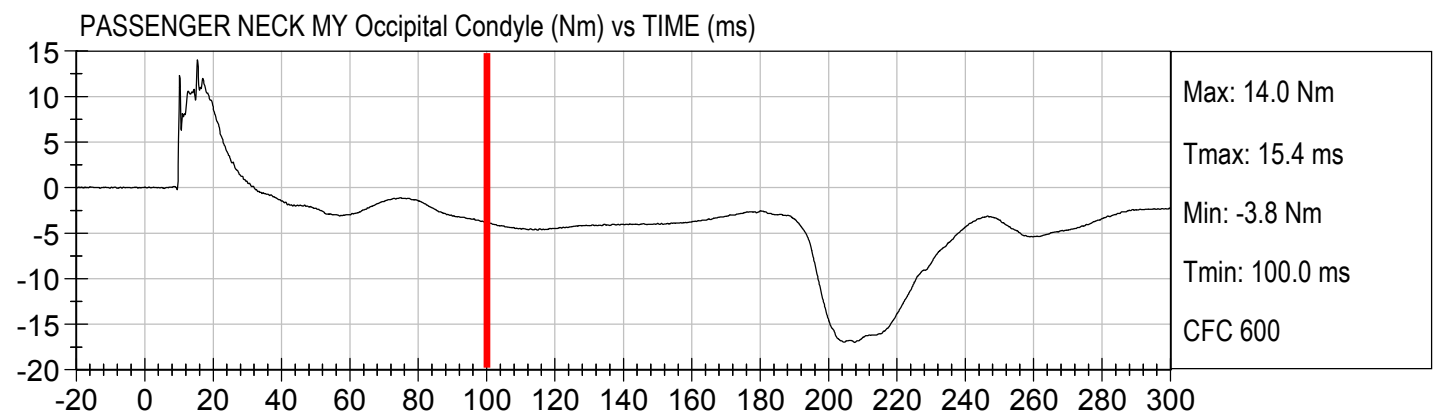
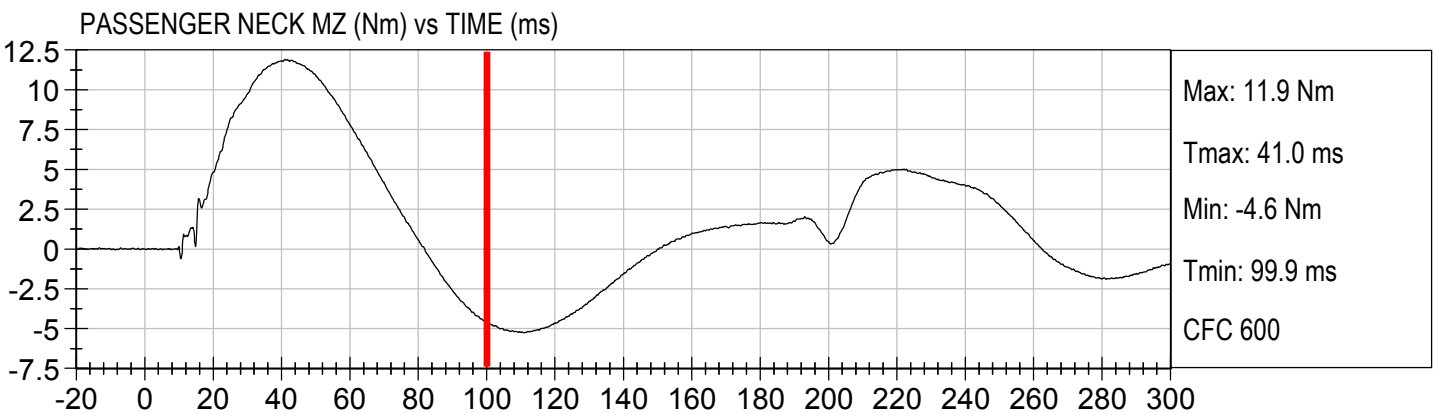
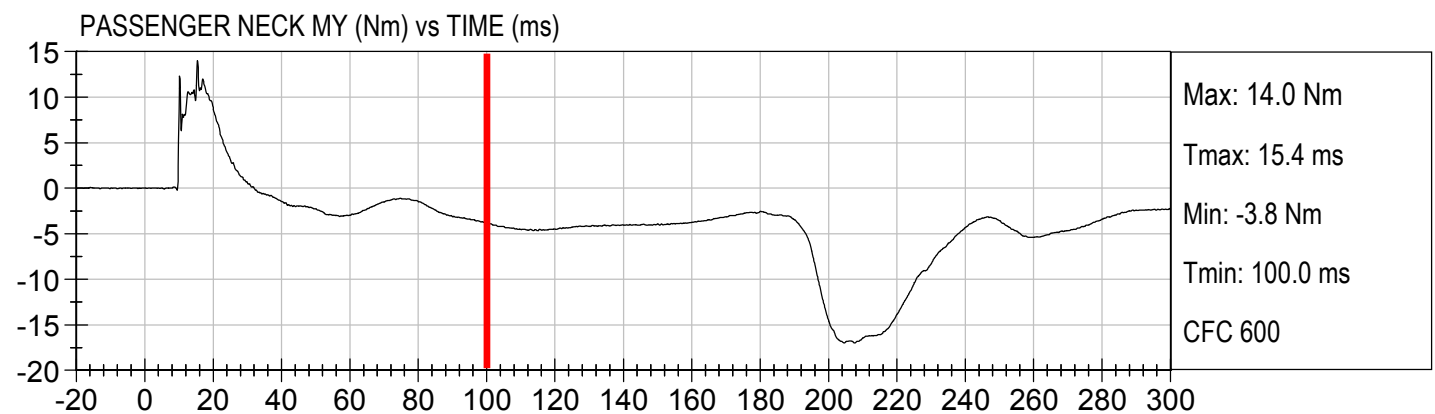
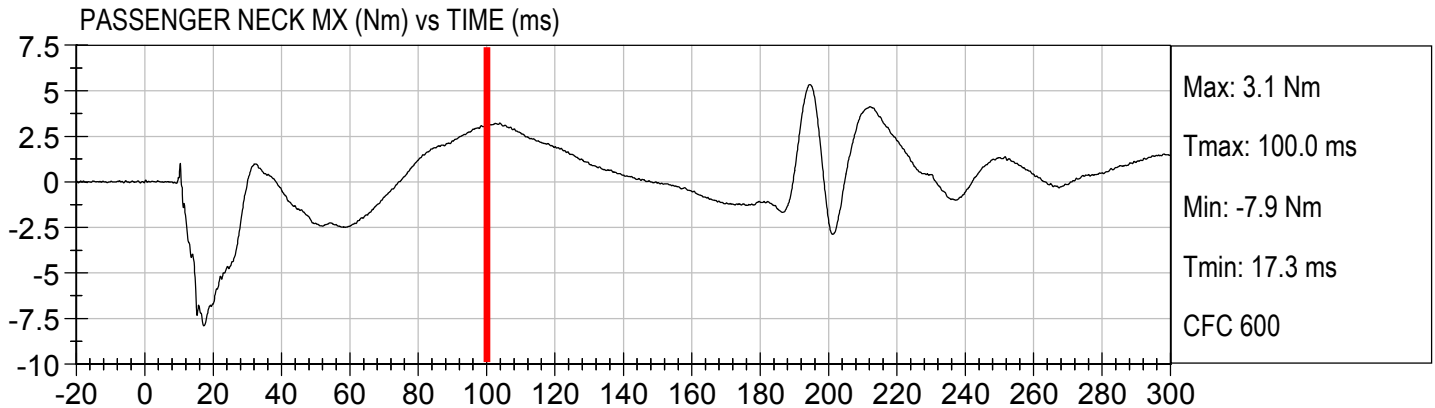
Injury Values Calculated between 0ms and 100ms



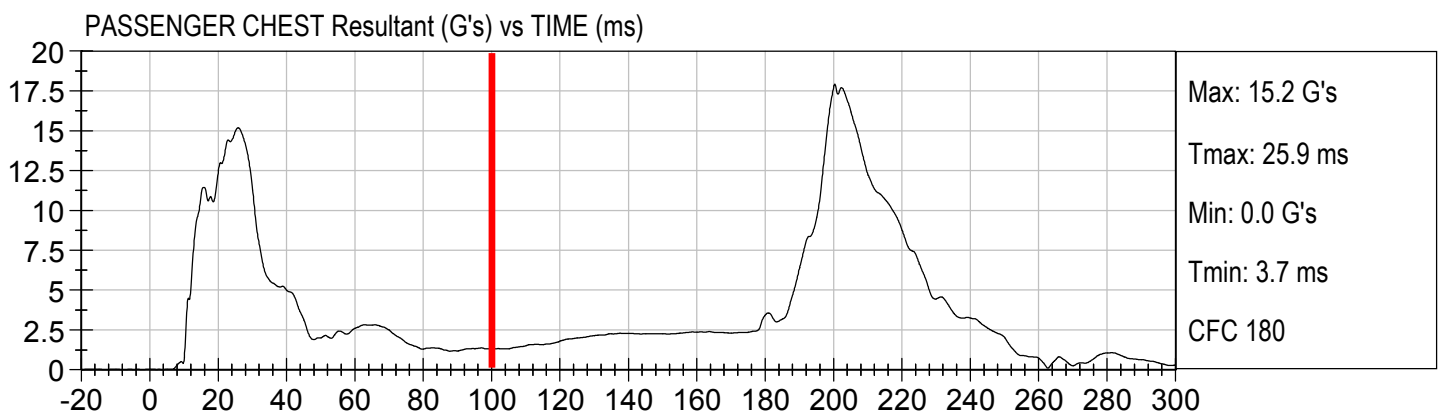
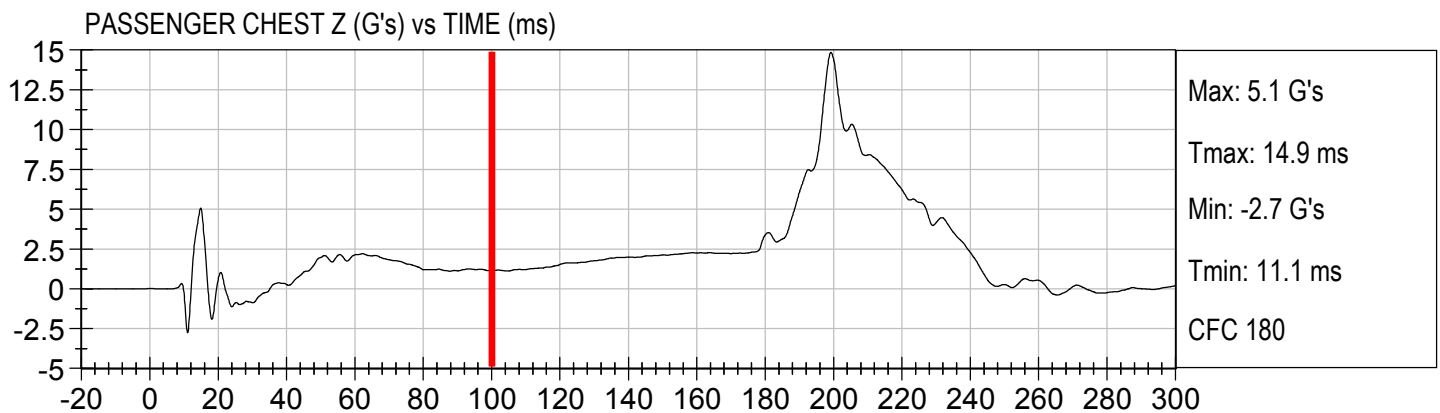
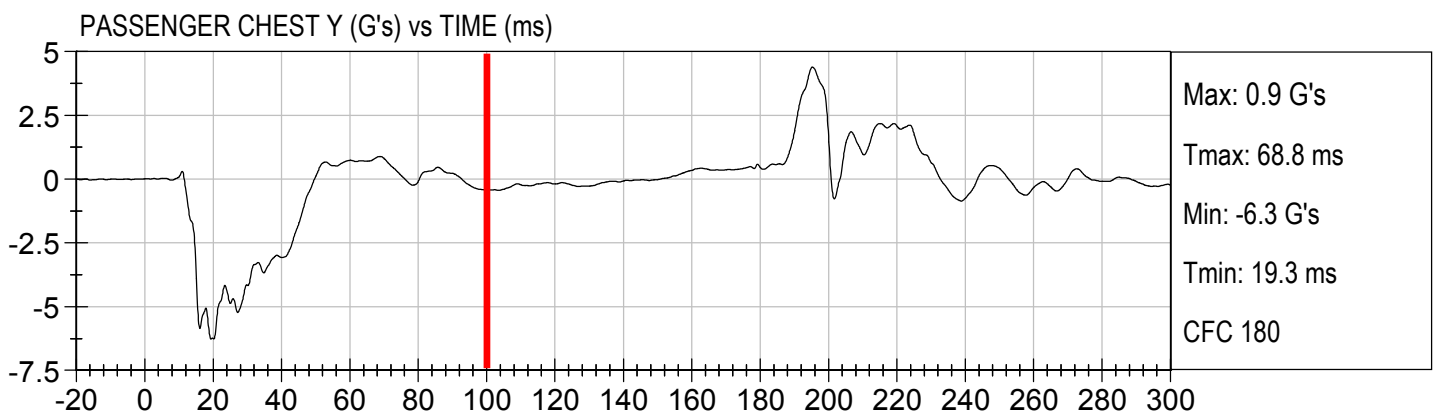
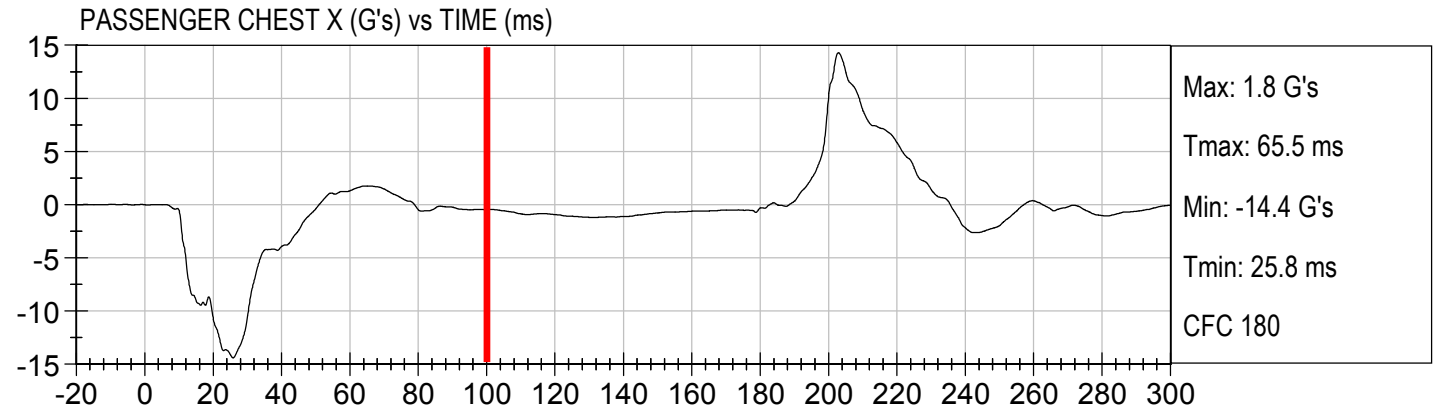
Injury Values Calculated between 0ms and 100ms



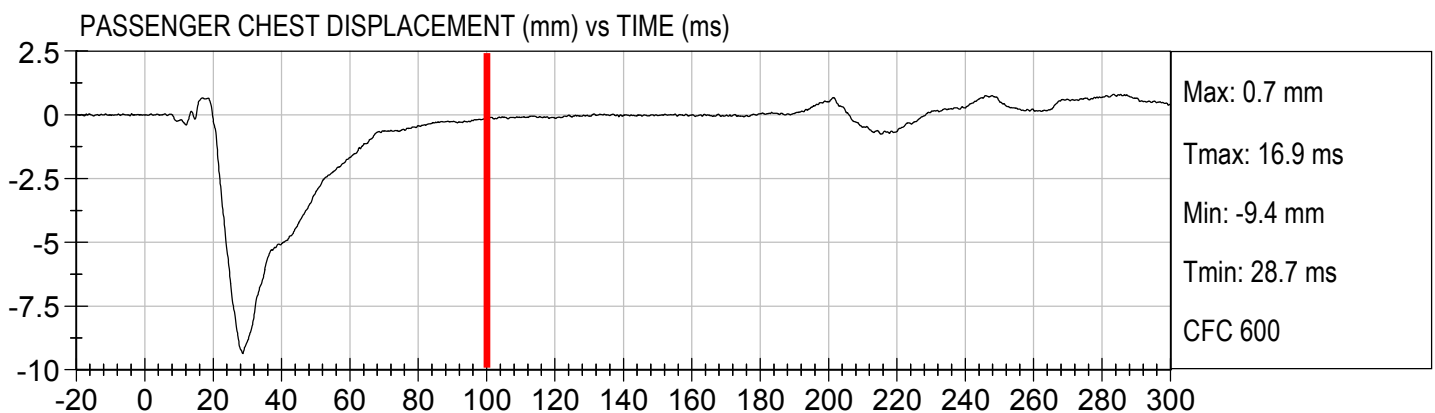
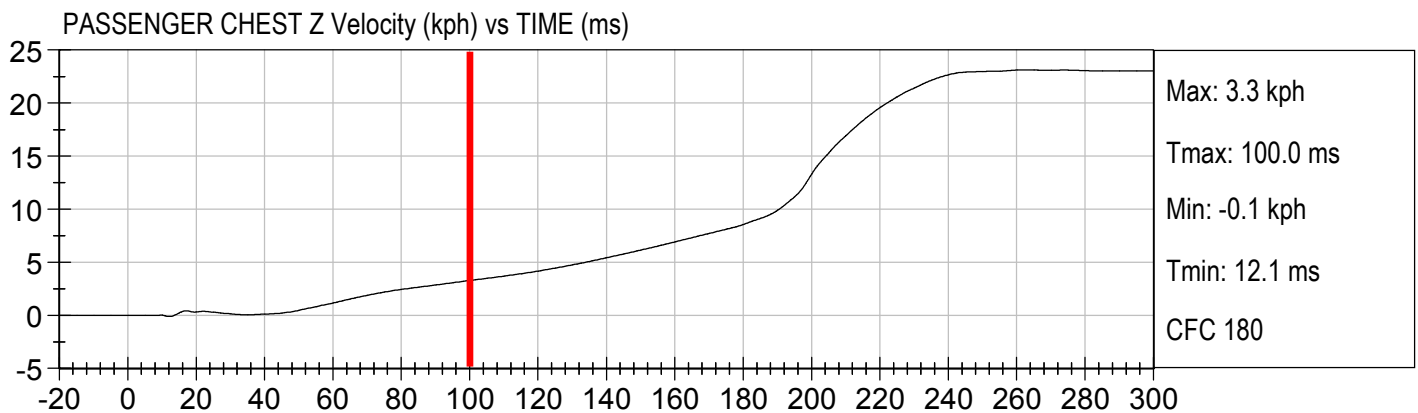
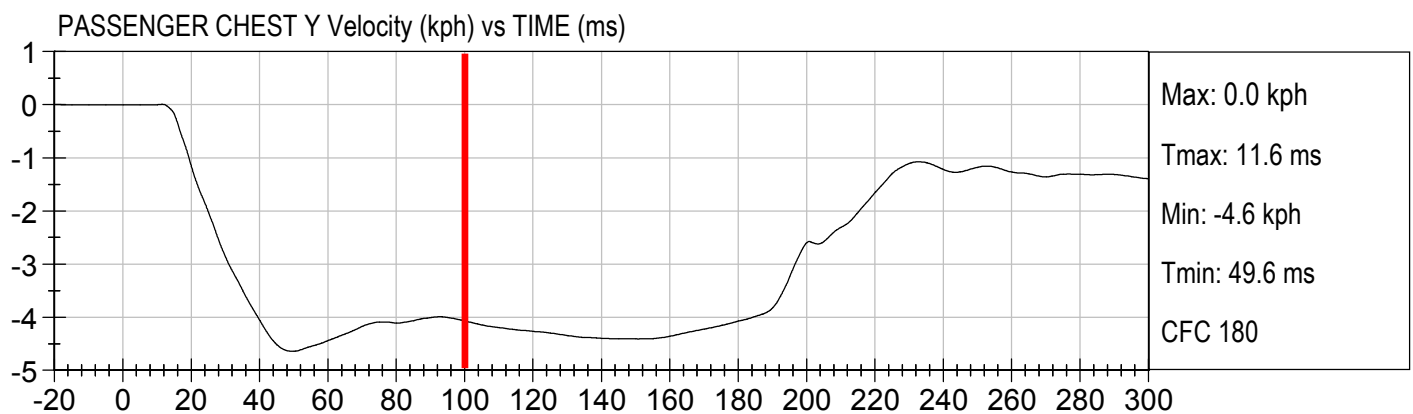
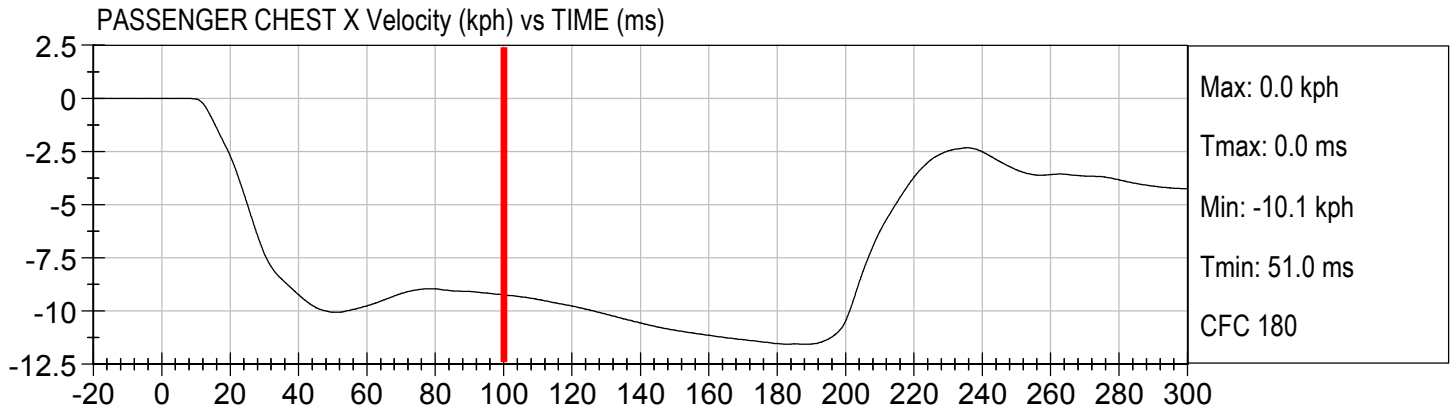
Injury Values Calculated between 0ms and 100ms



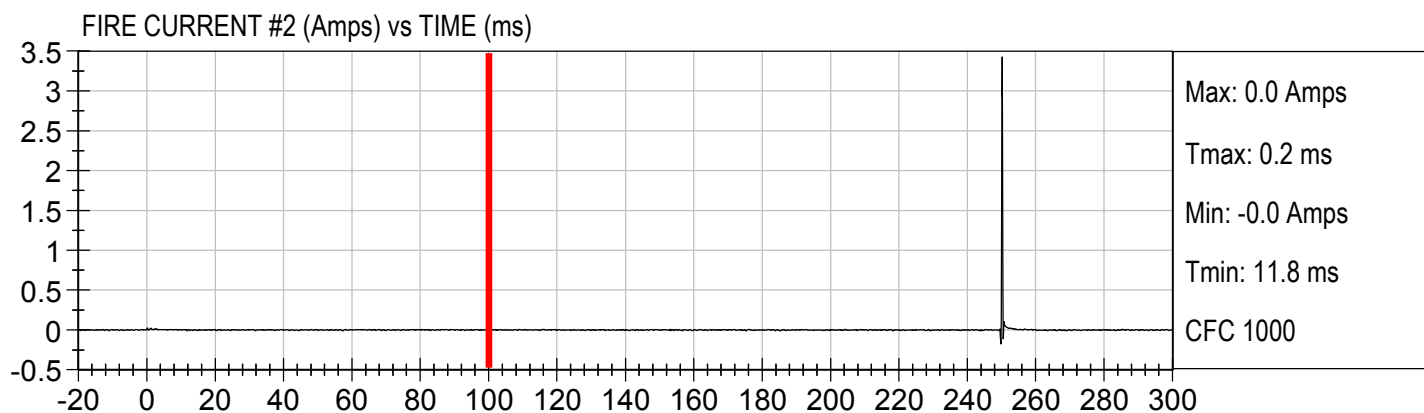
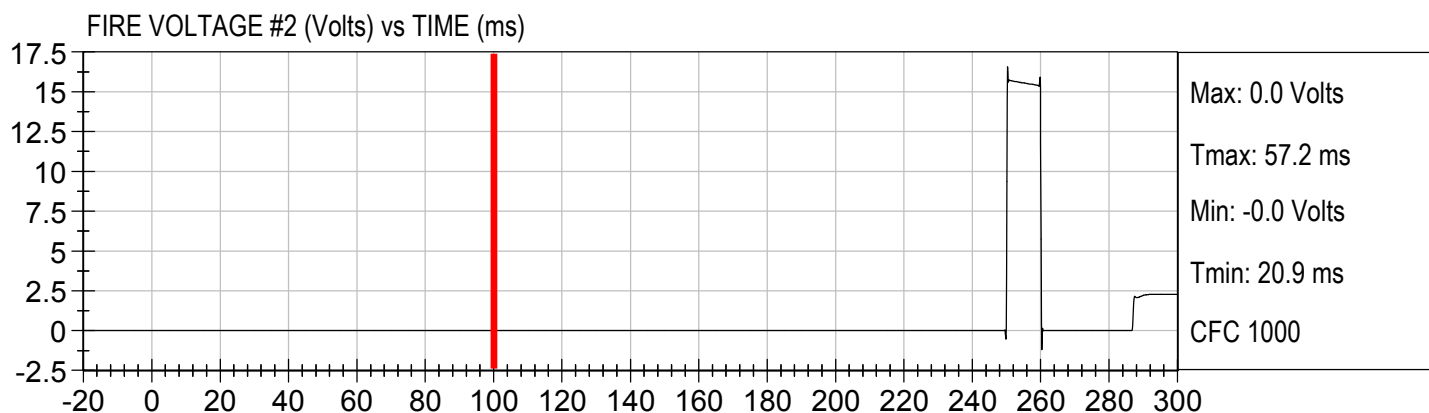
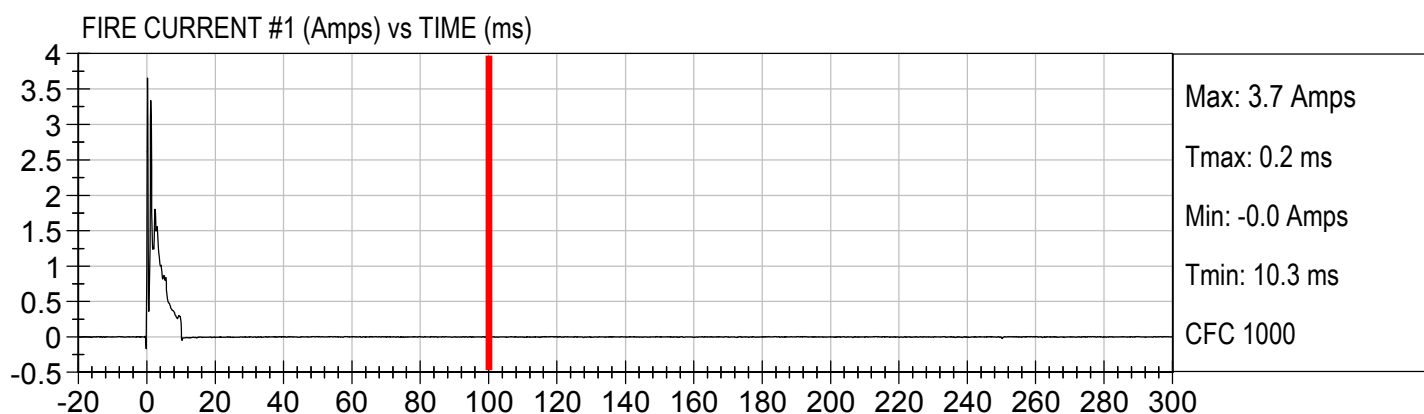
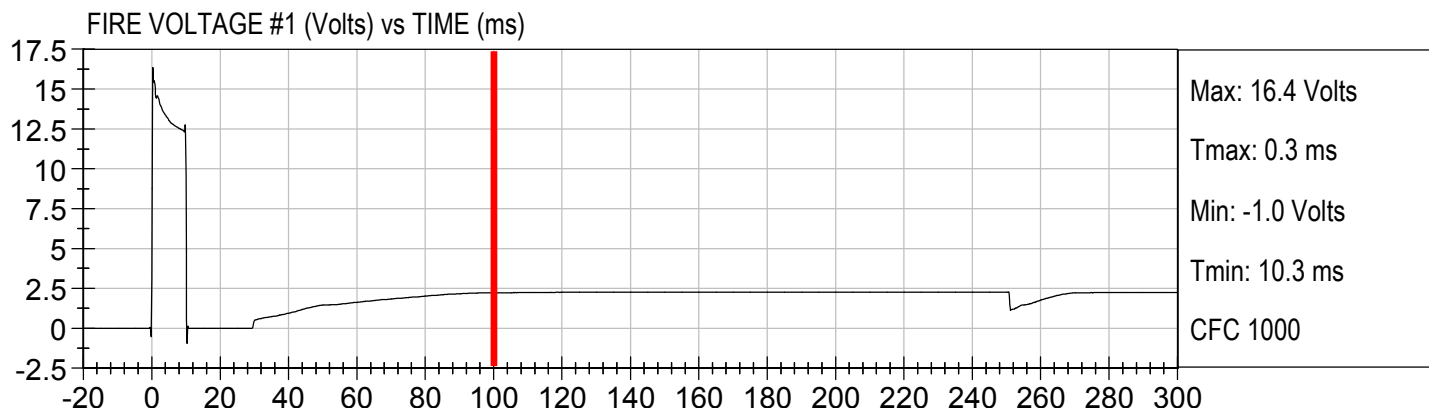
Injury Values Calculated between 0ms and 100ms



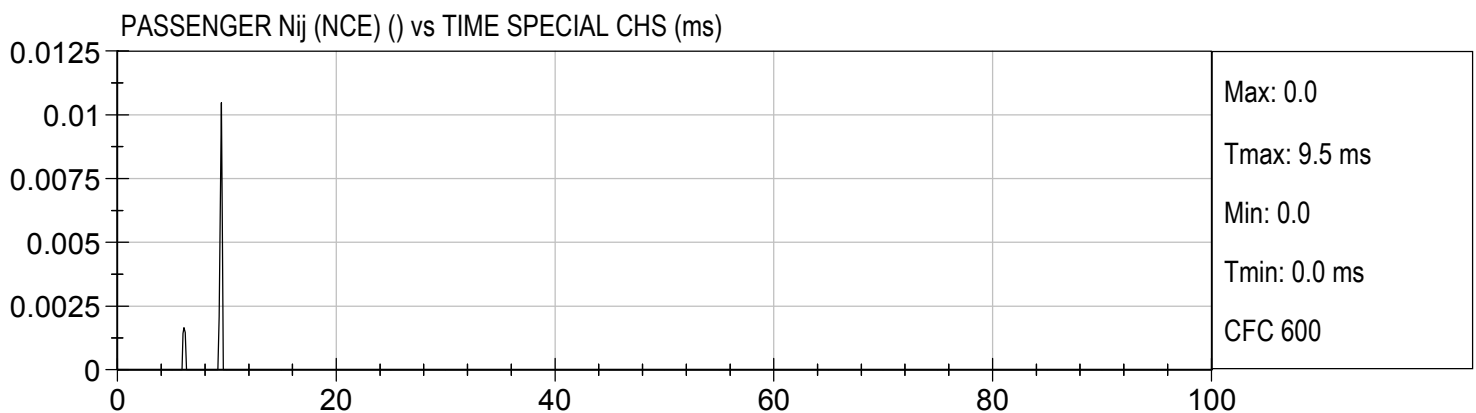
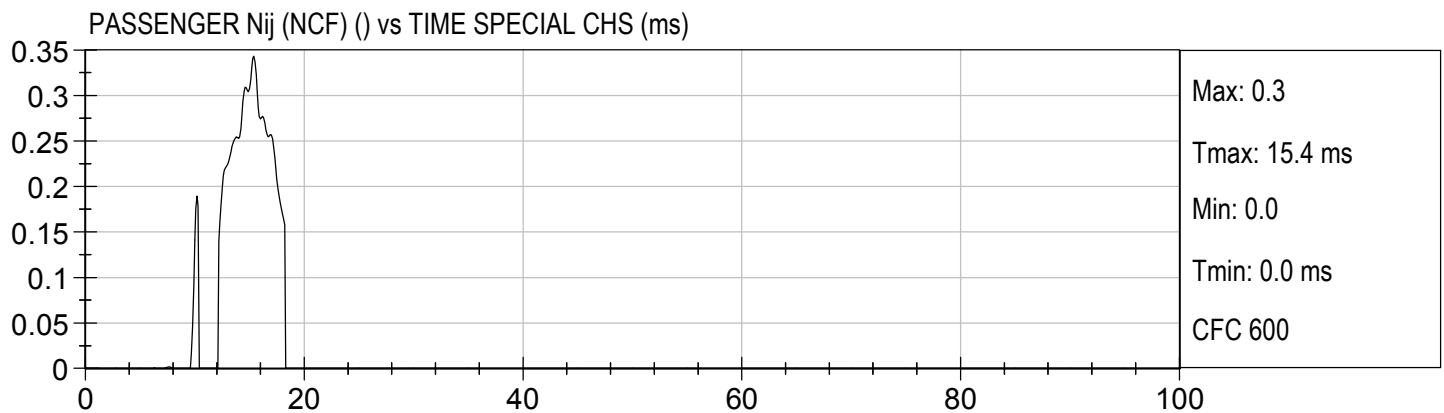
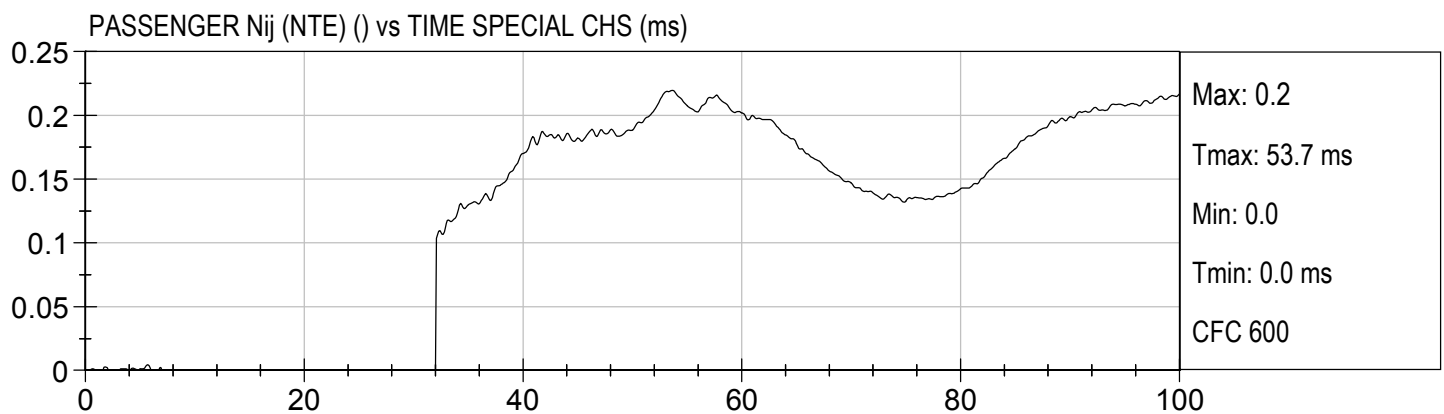
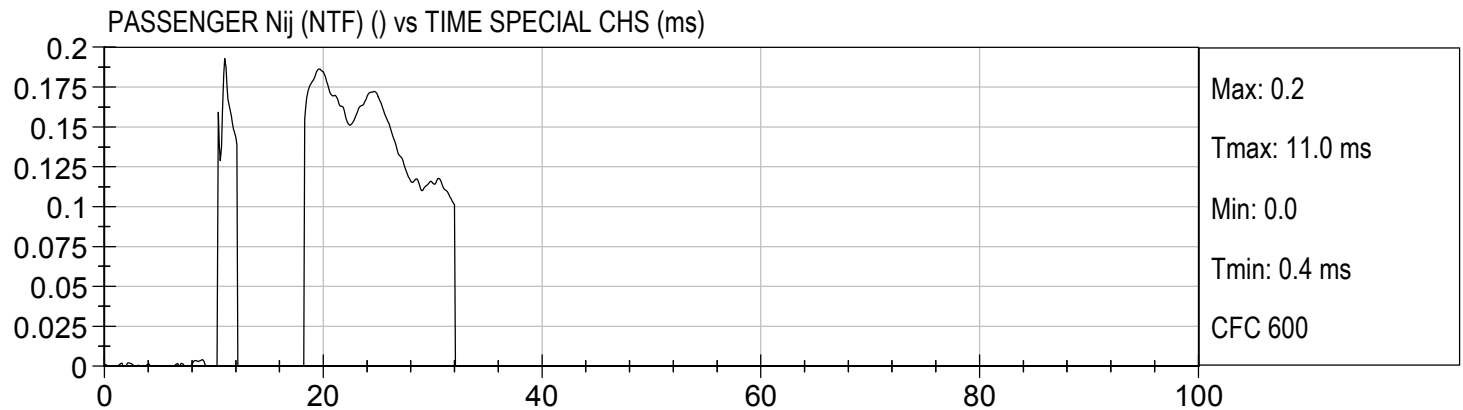
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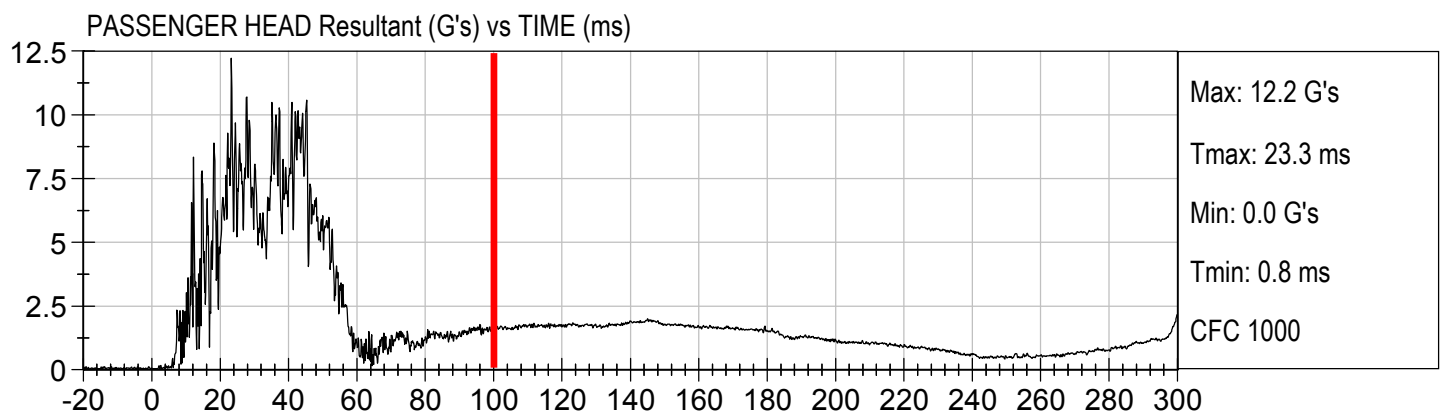
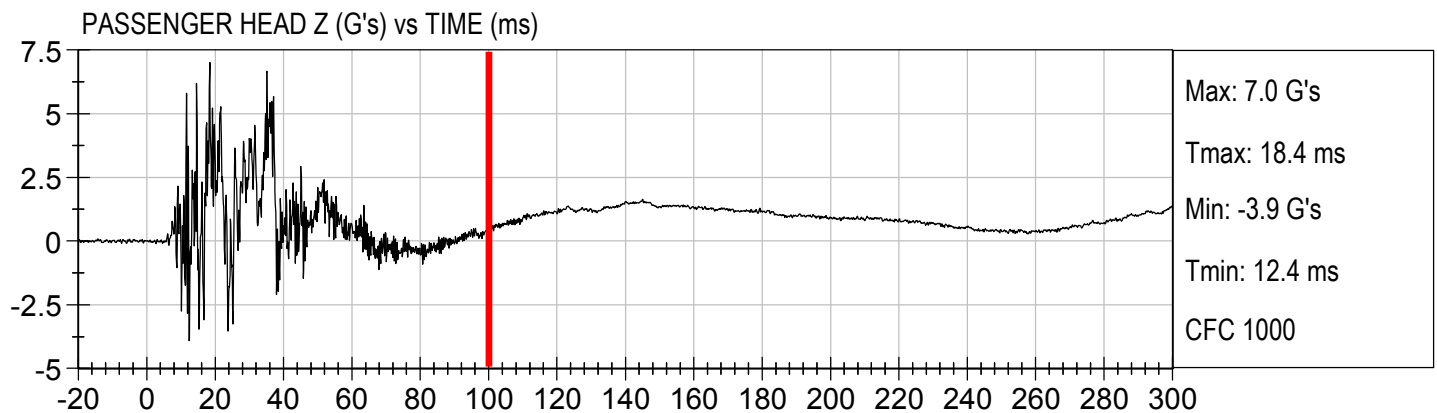
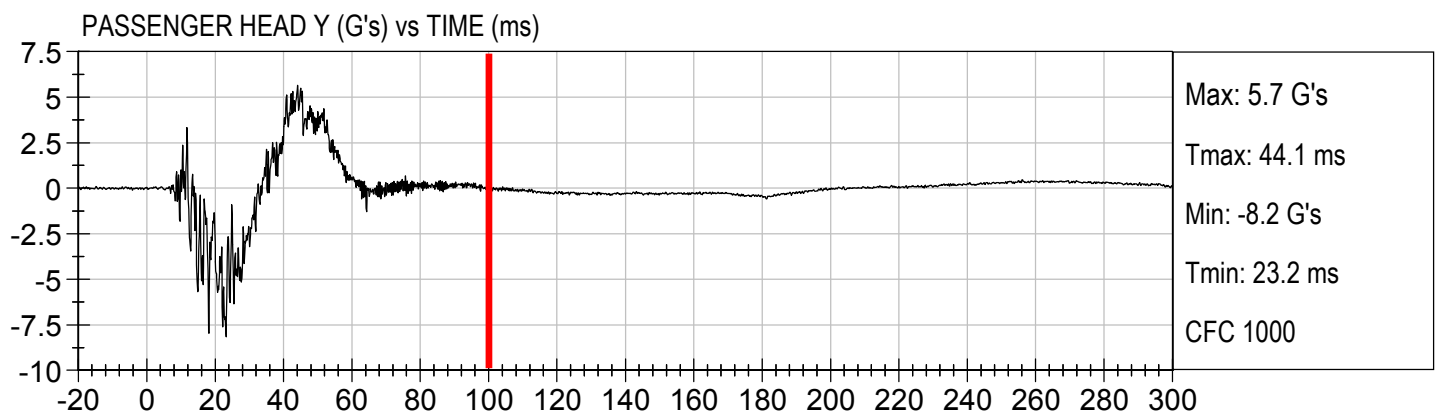
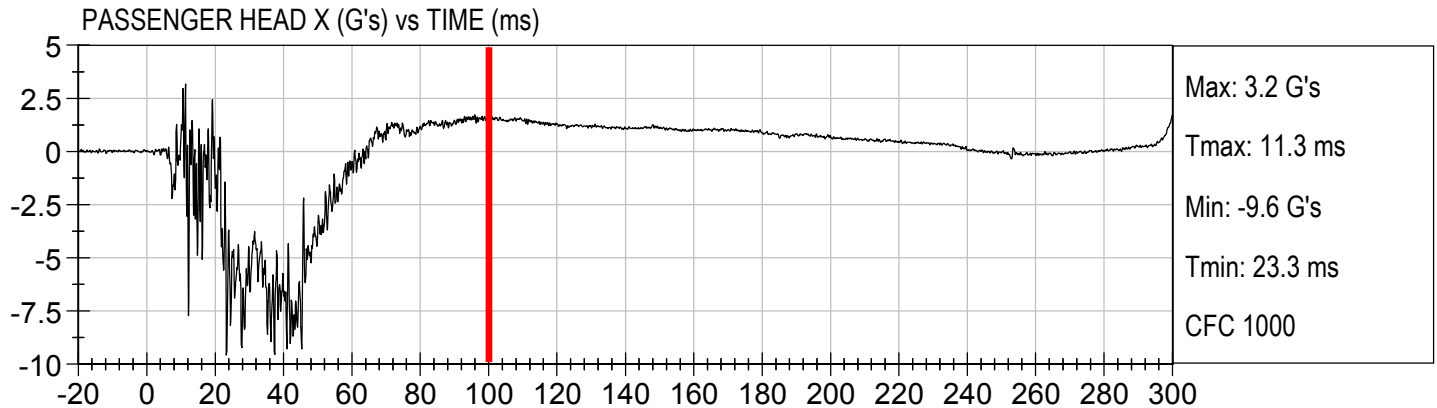
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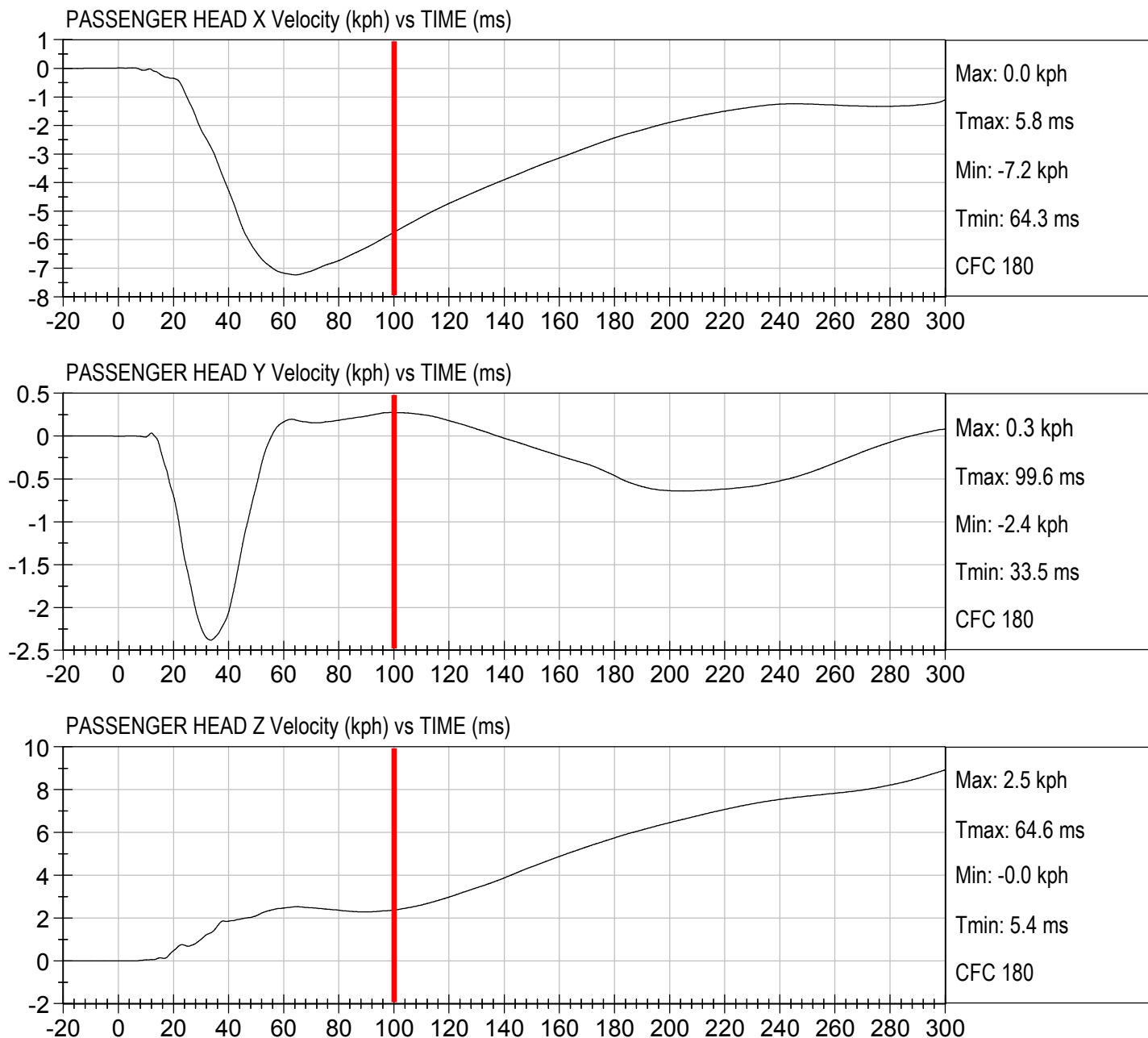




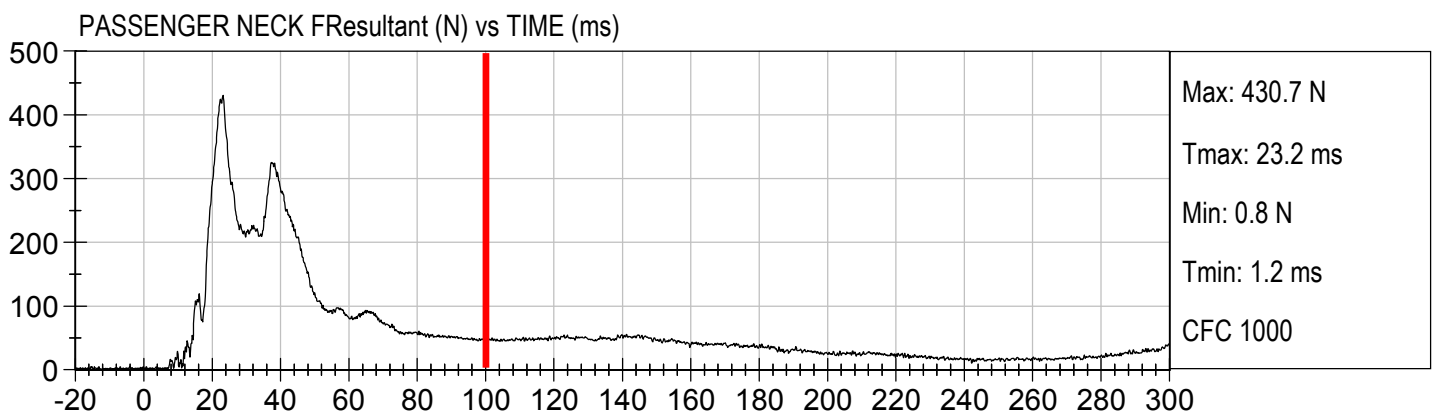
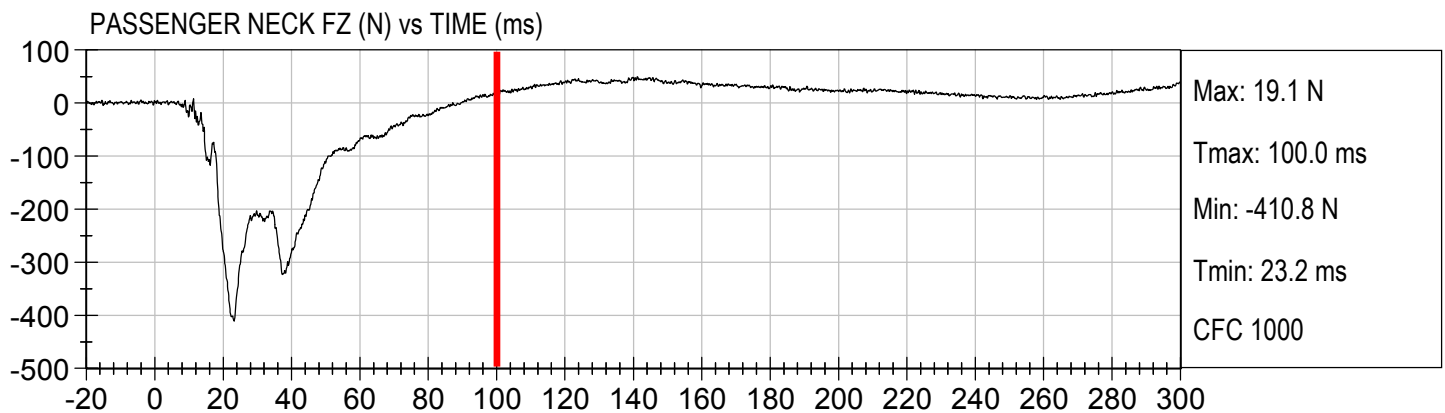
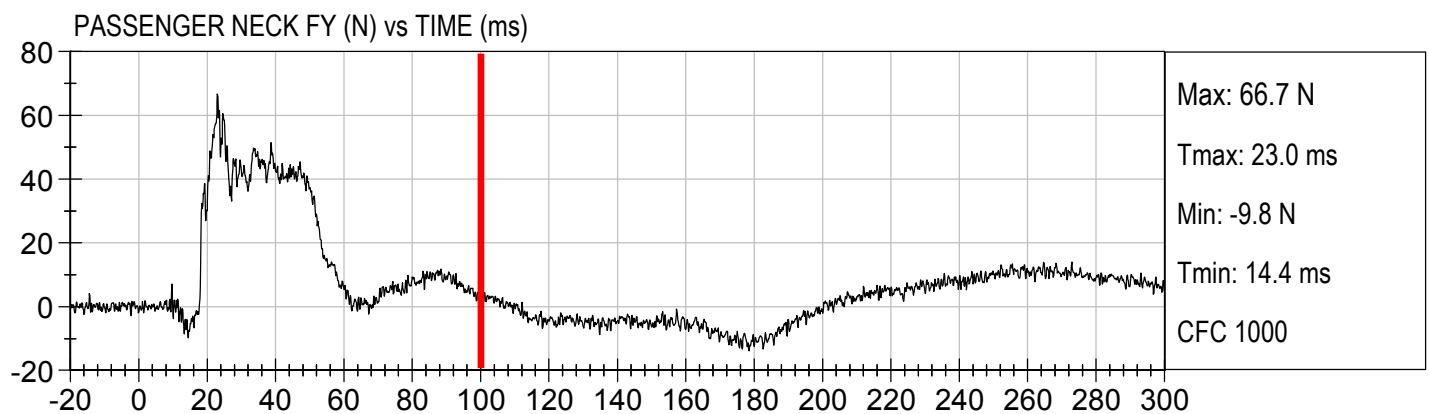
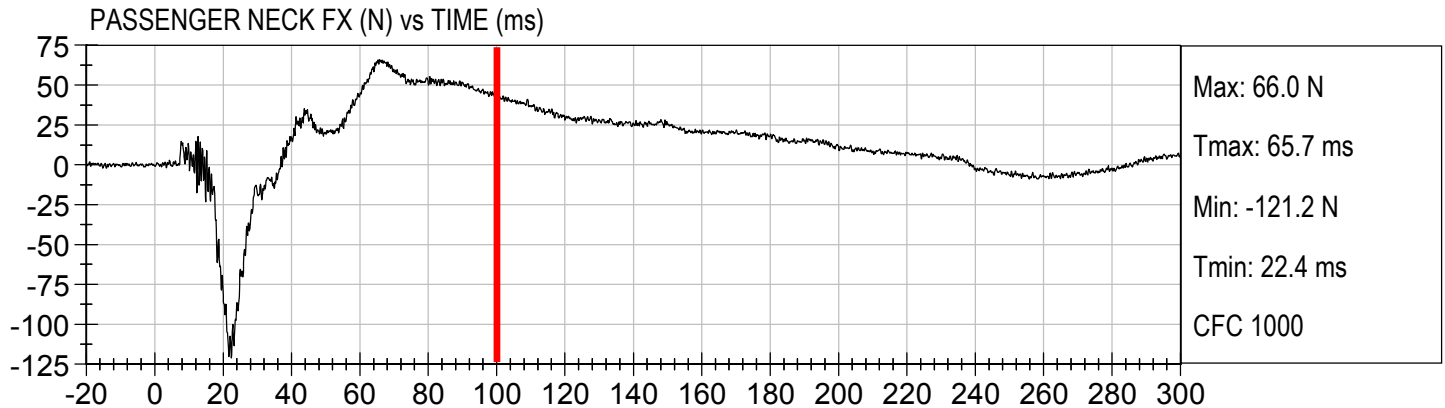
Injury Values Calculated between 0ms and 100ms



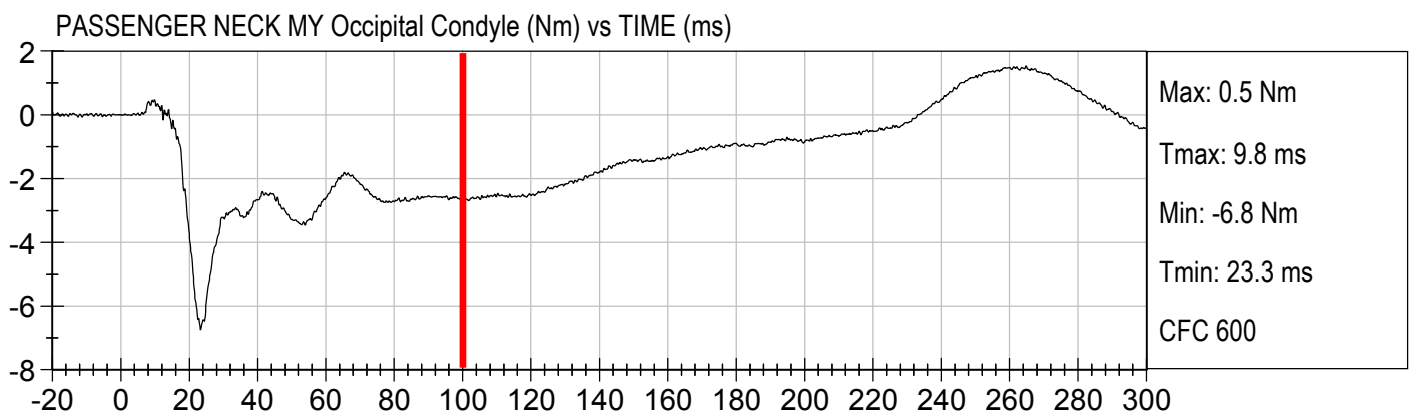
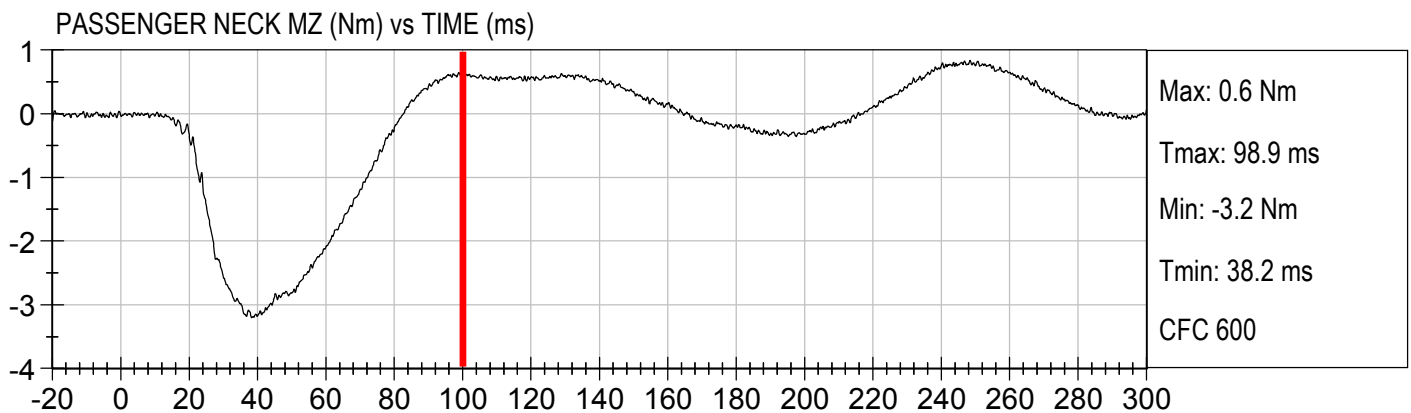
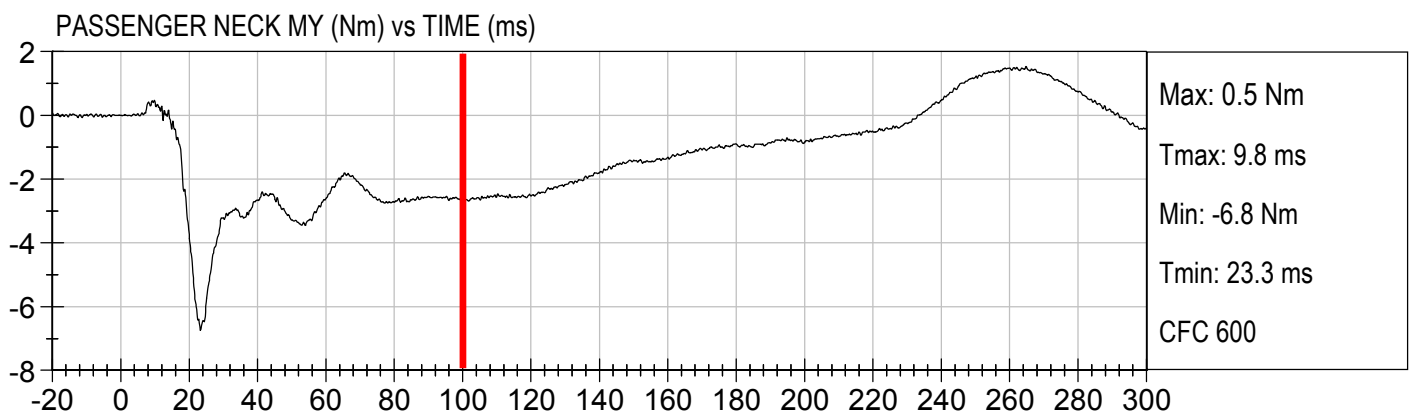
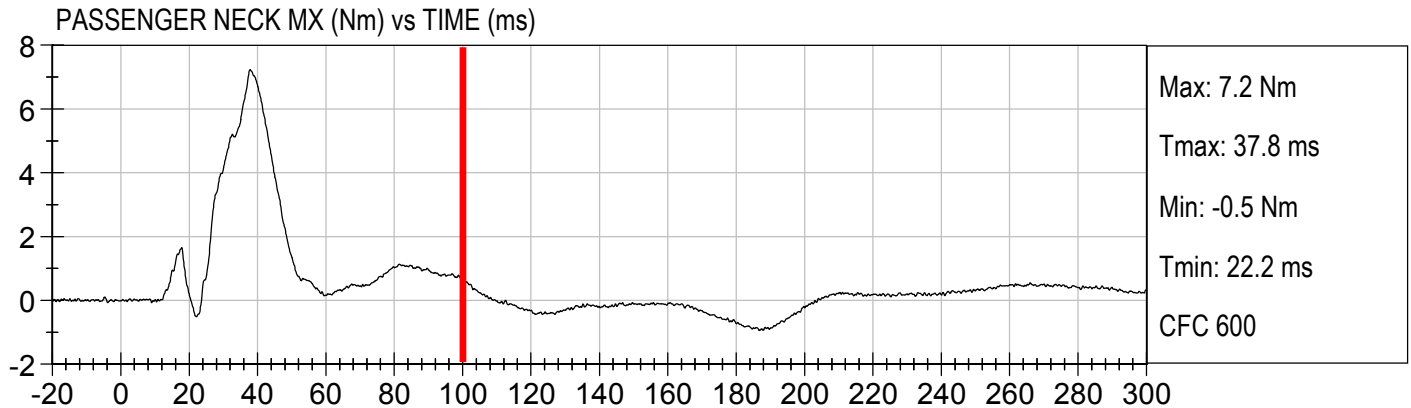
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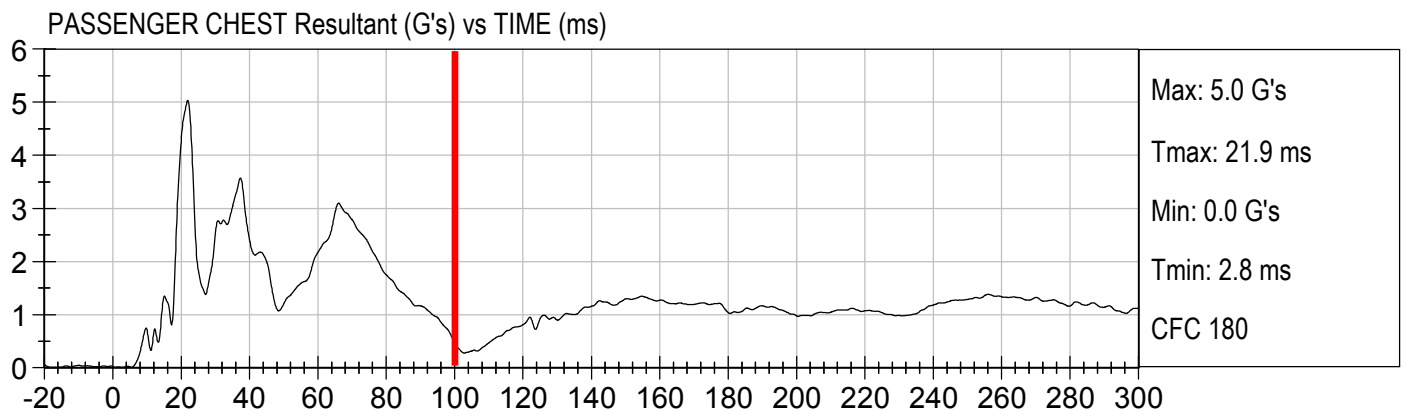
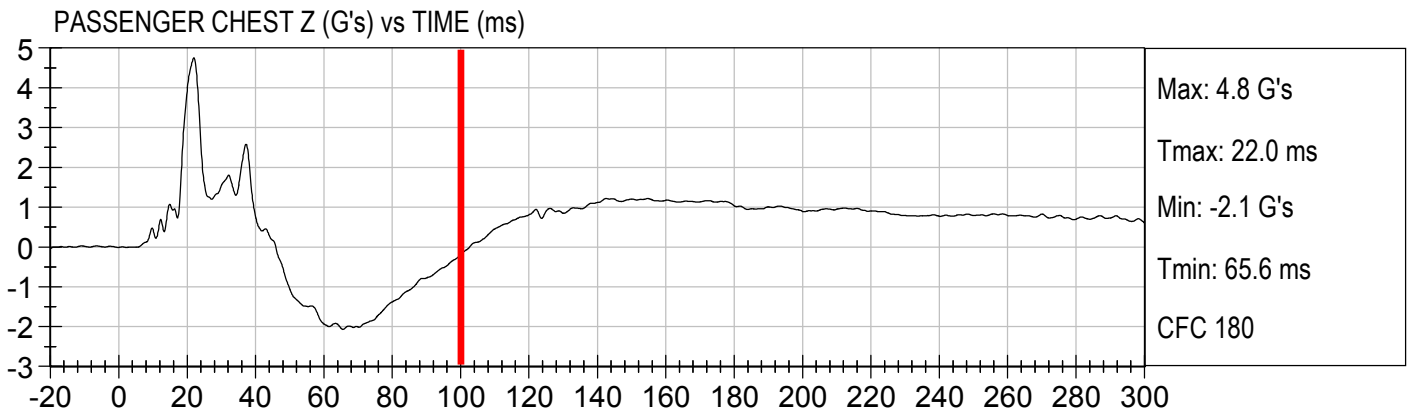
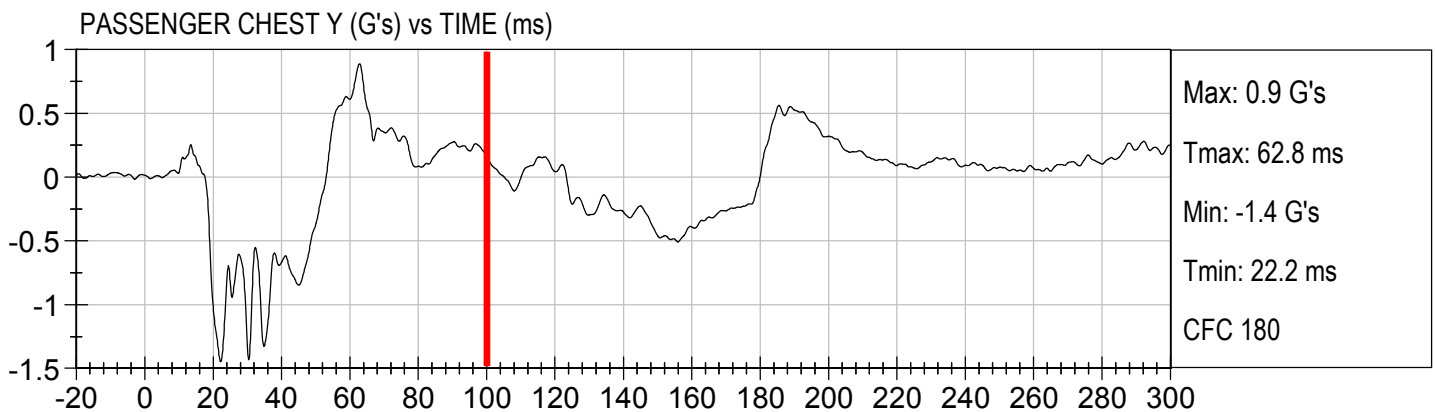
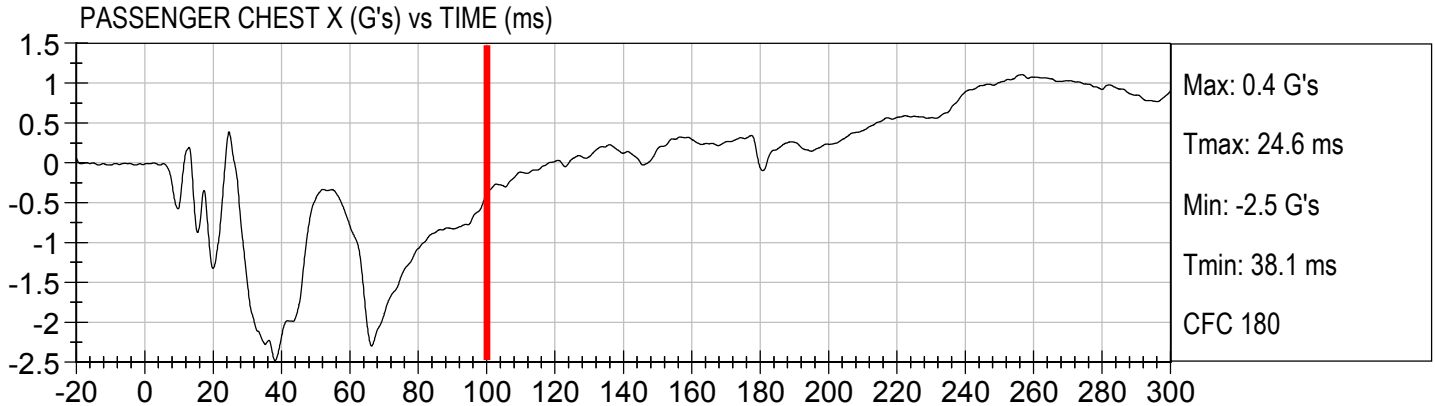
Injury Values Calculated between 0ms and 100ms



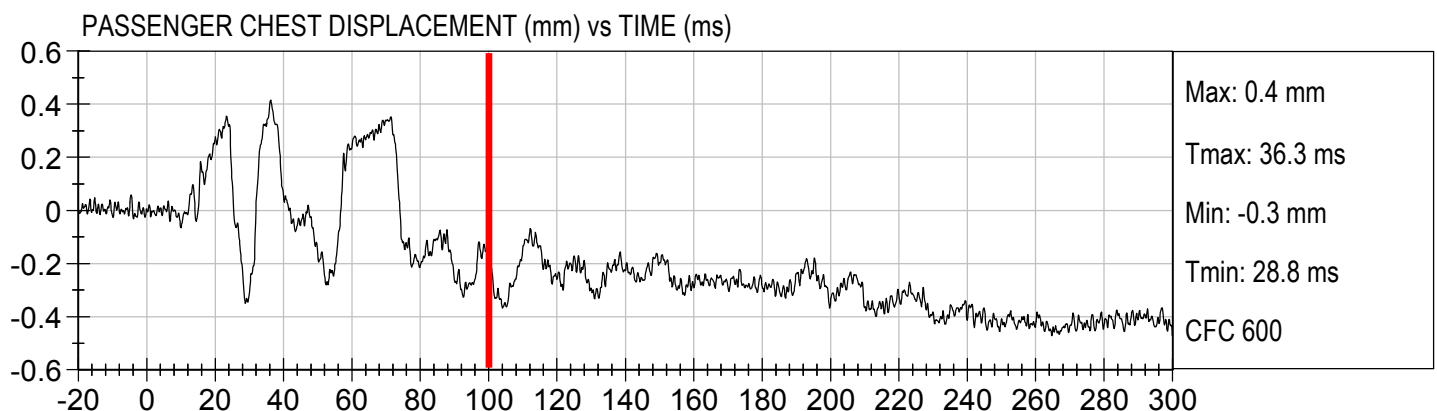
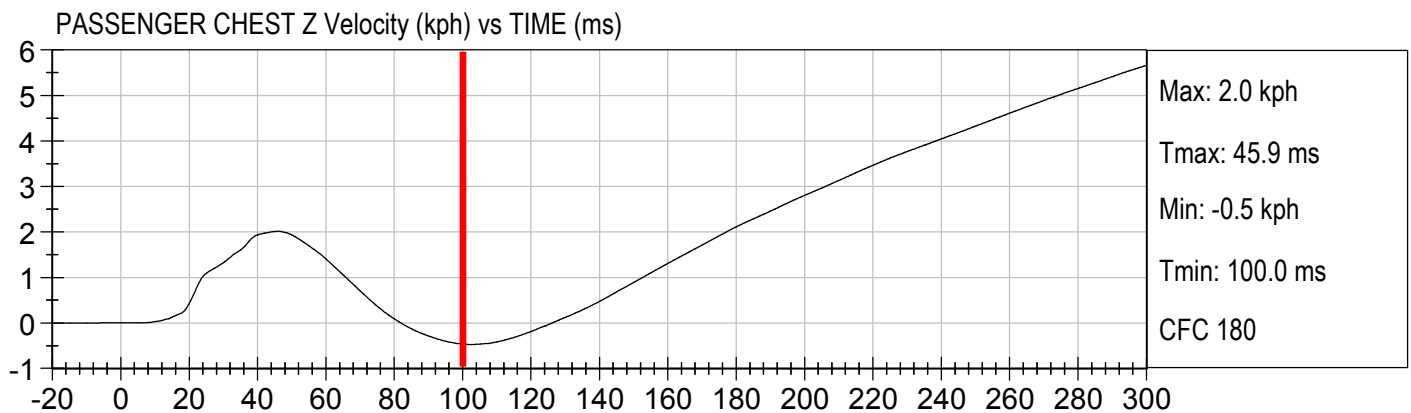
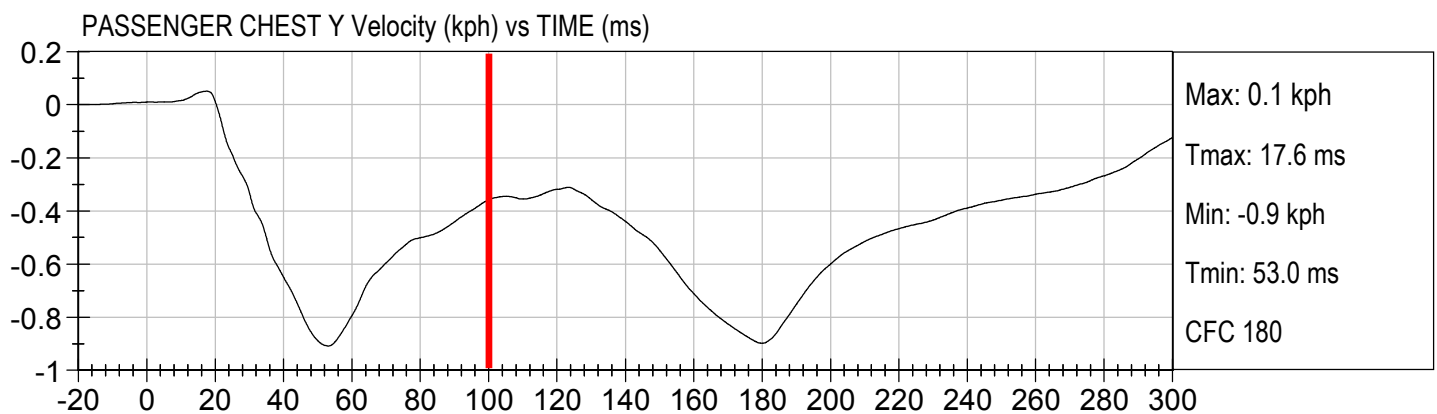
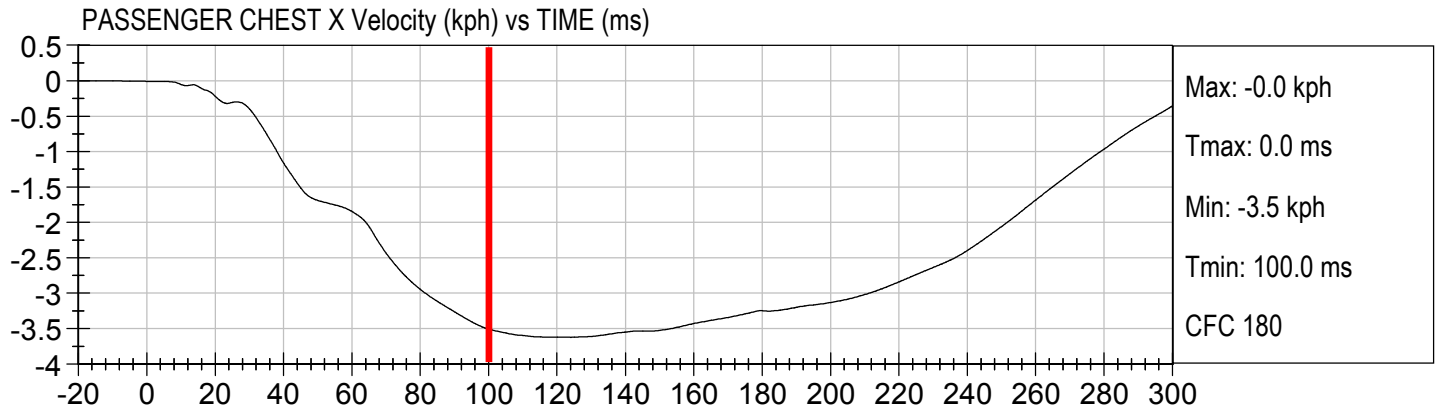
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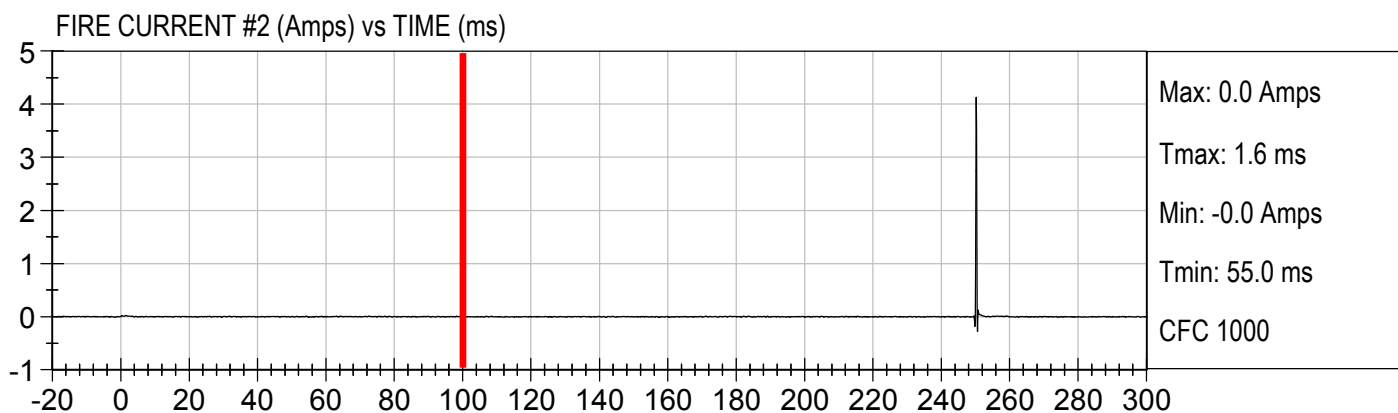
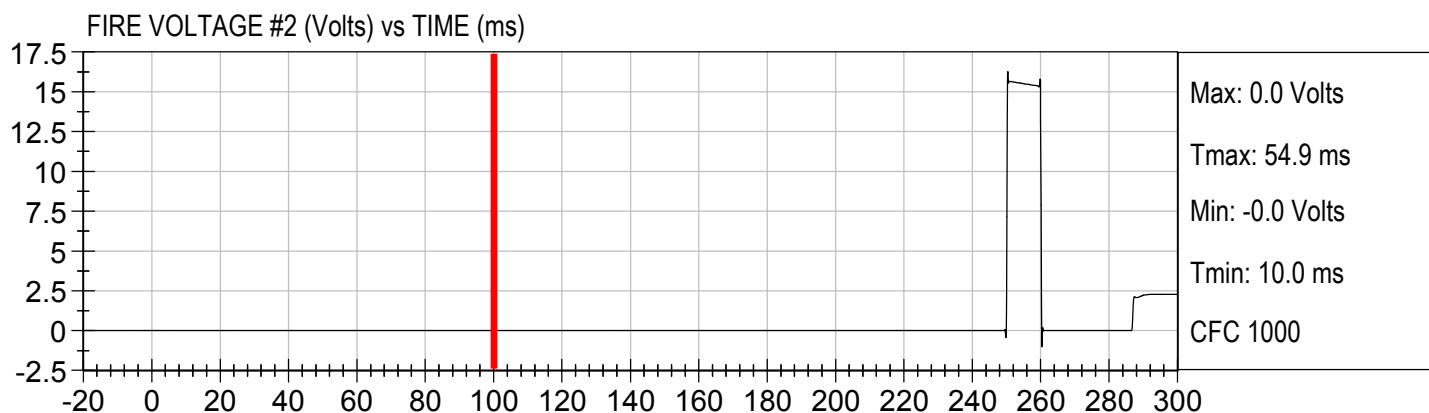
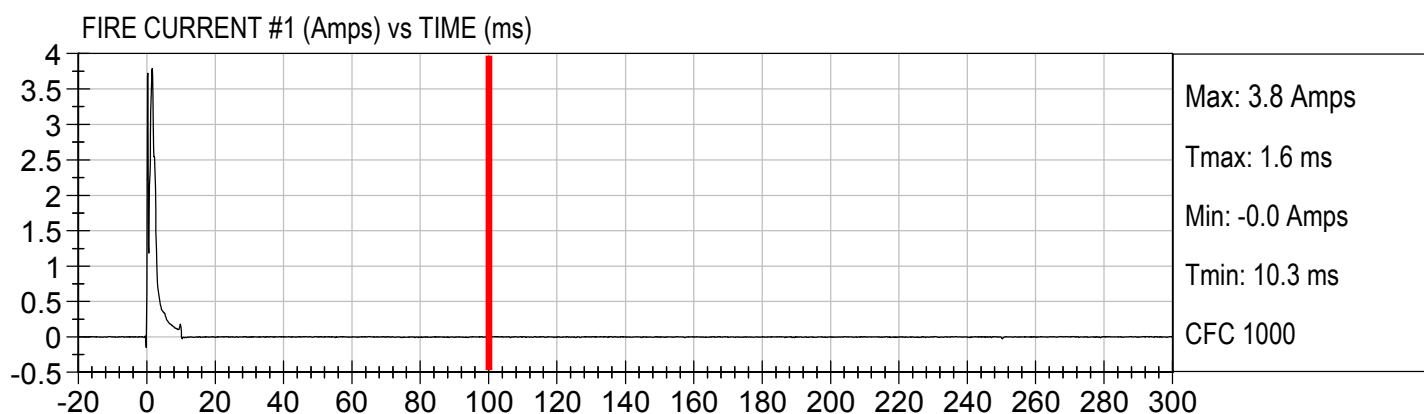
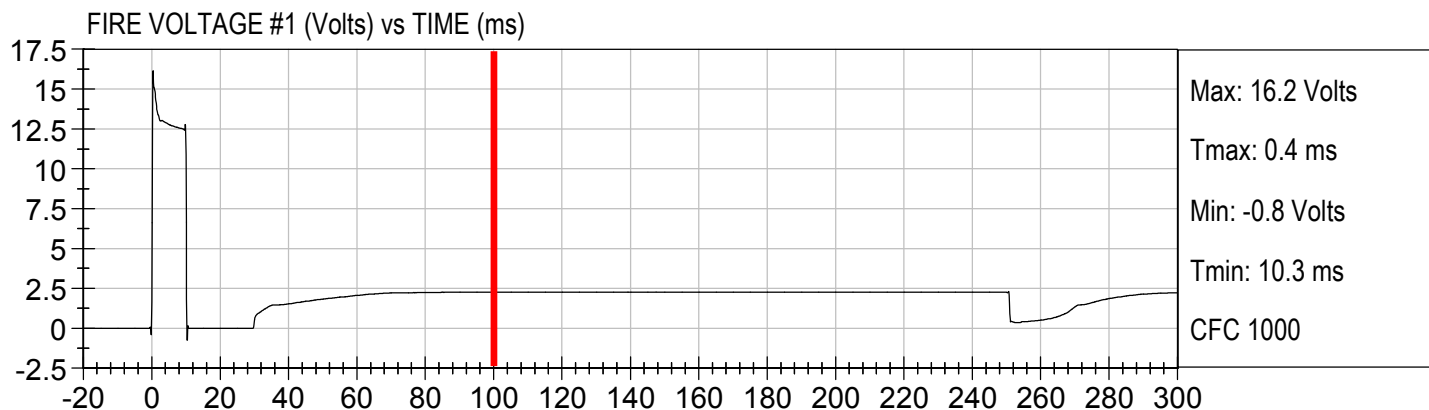
Injury Values Calculated between 0ms and 100ms



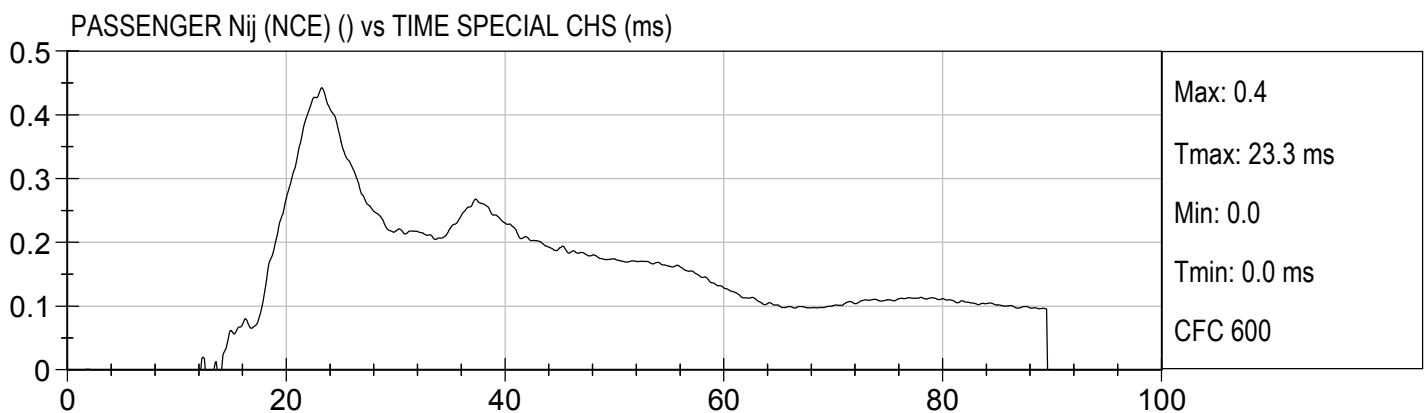
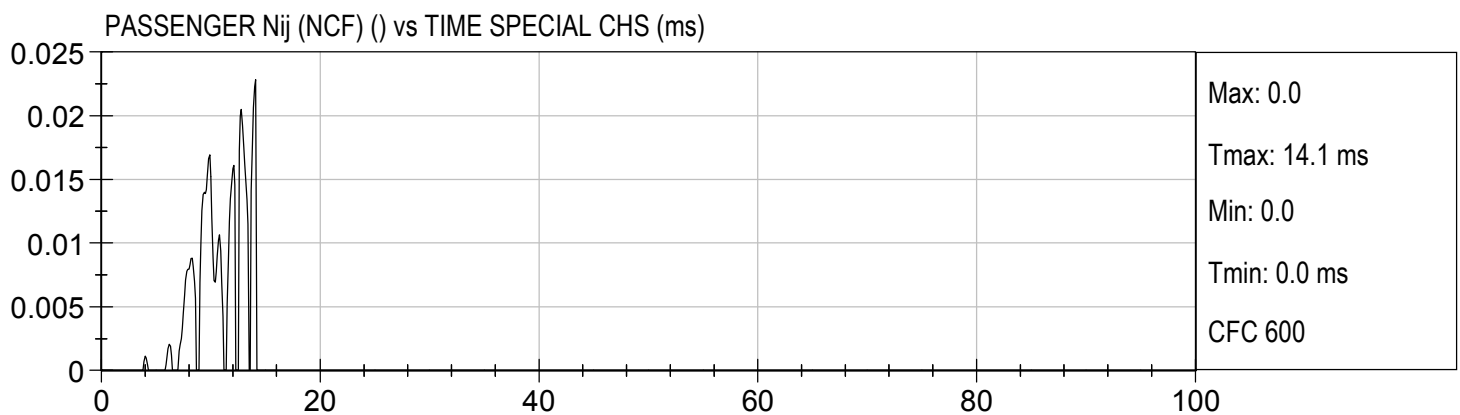
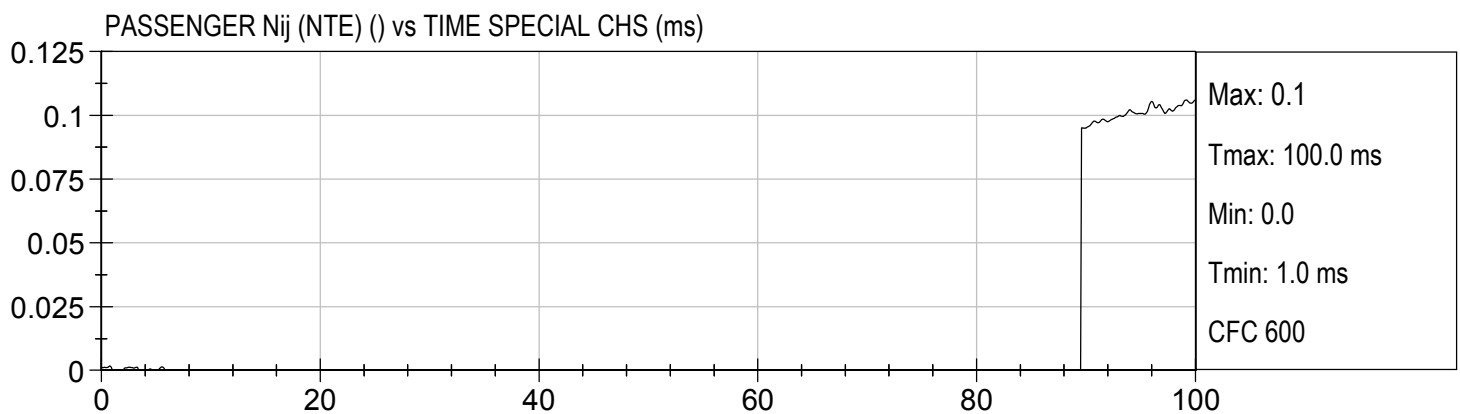
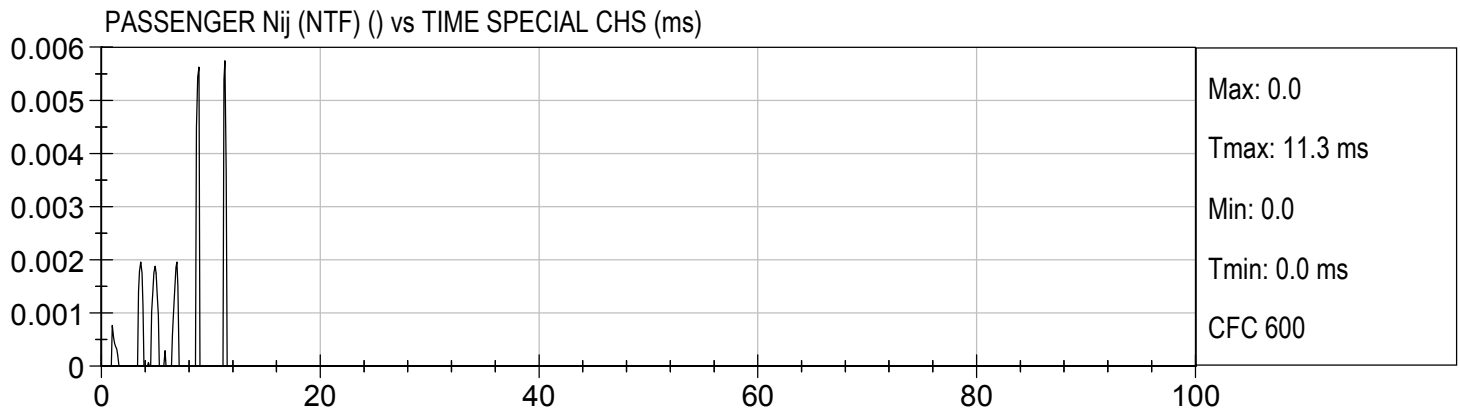
Injury Values Calculated between 0ms and 100ms



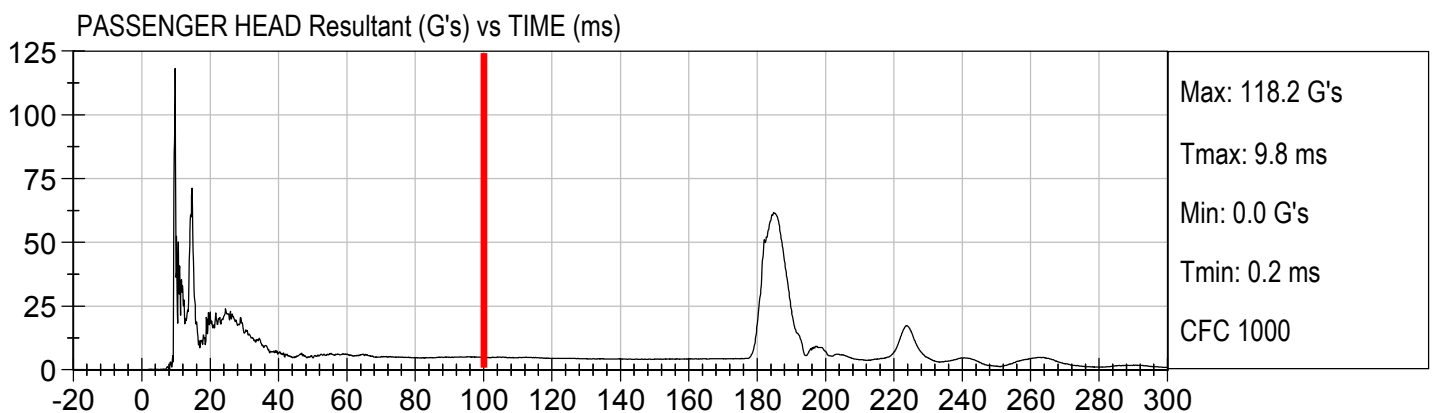
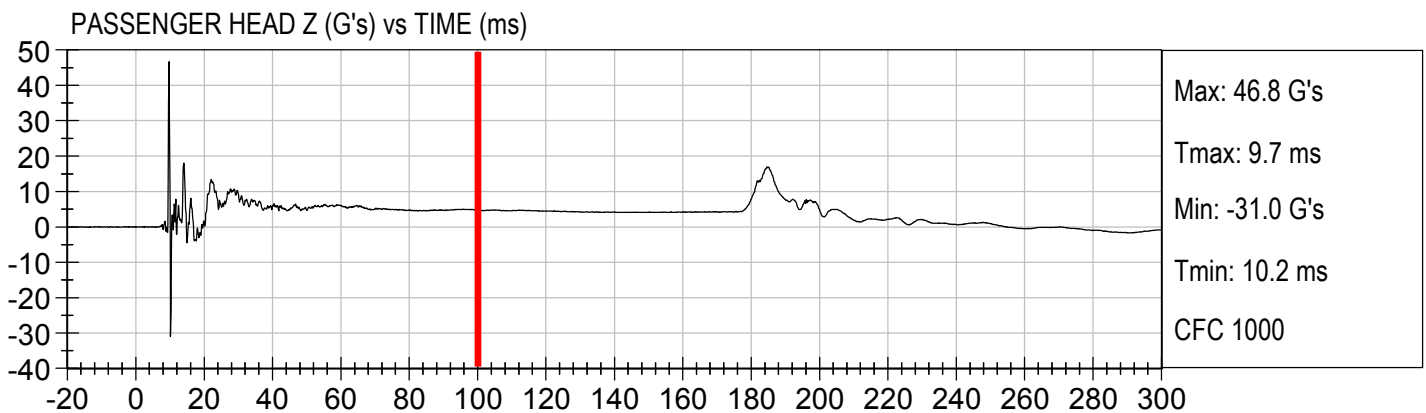
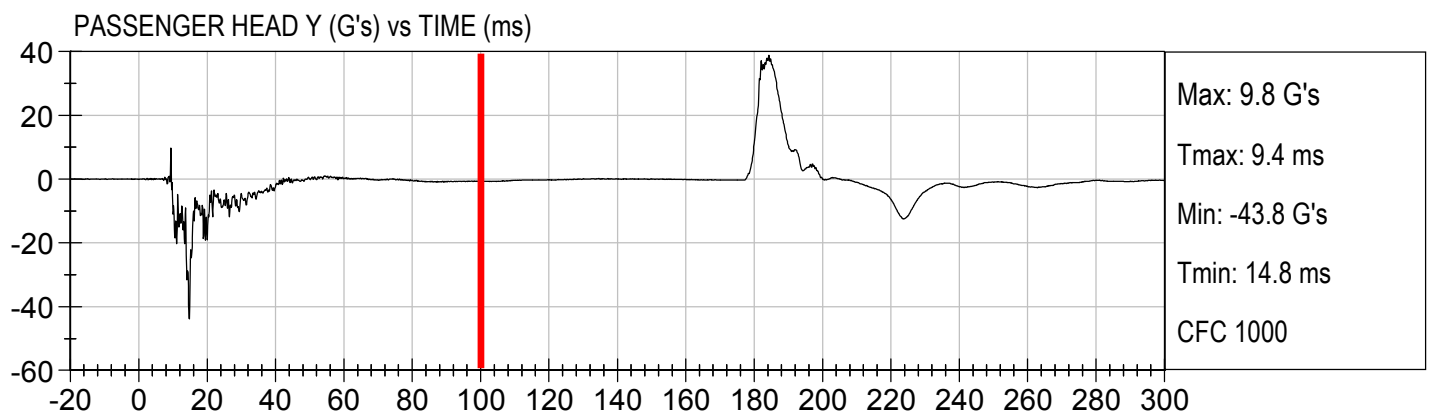
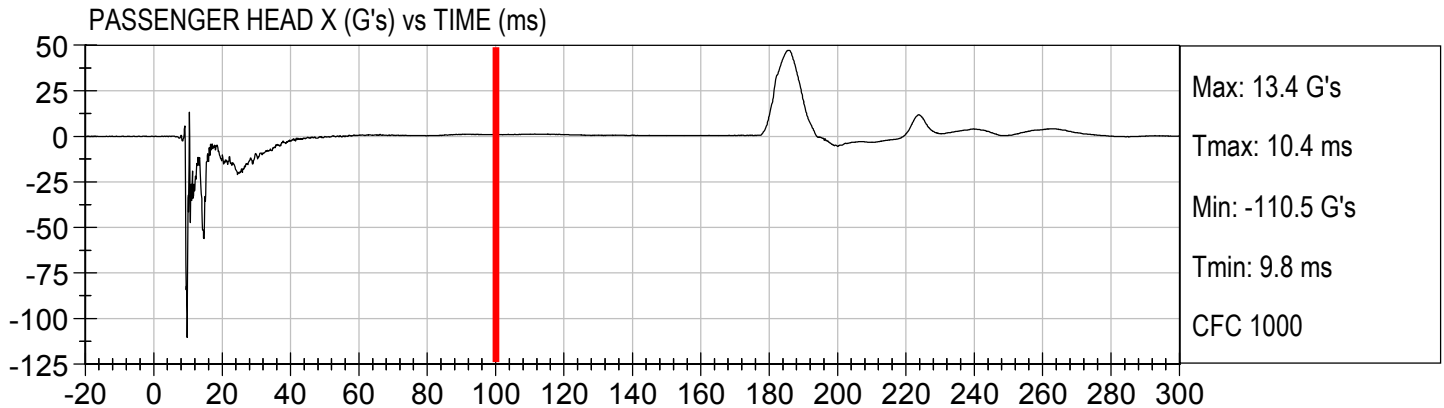
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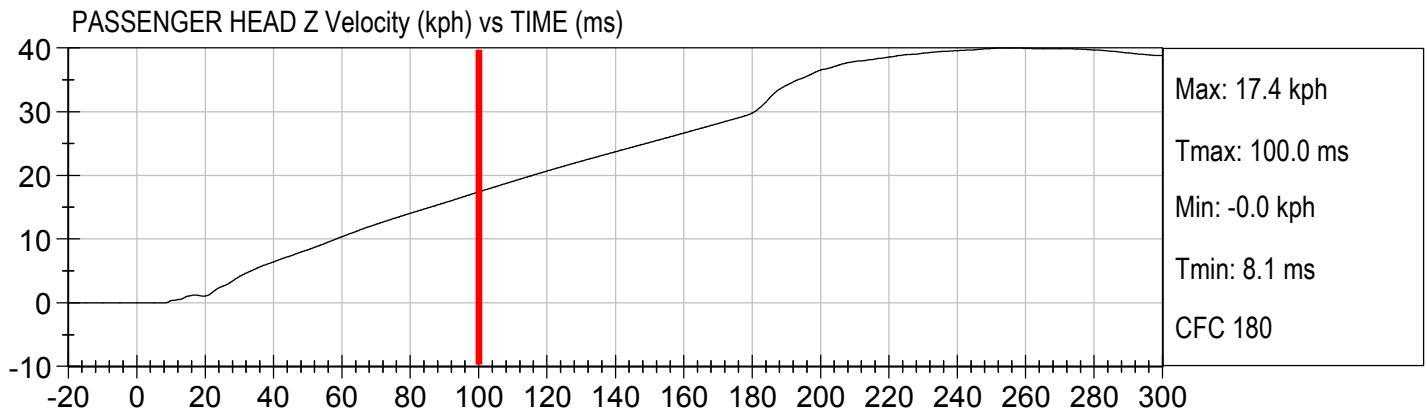
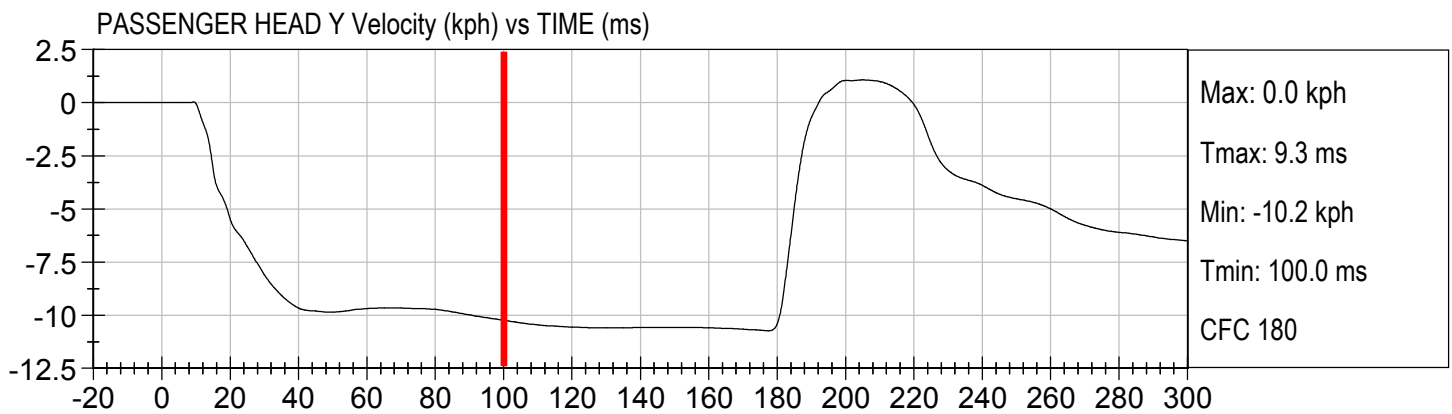
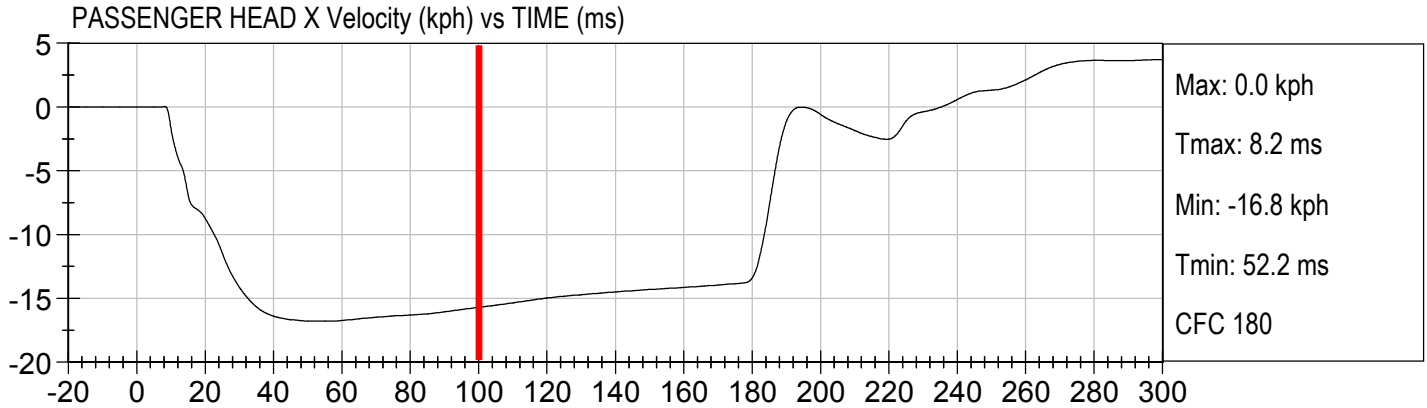




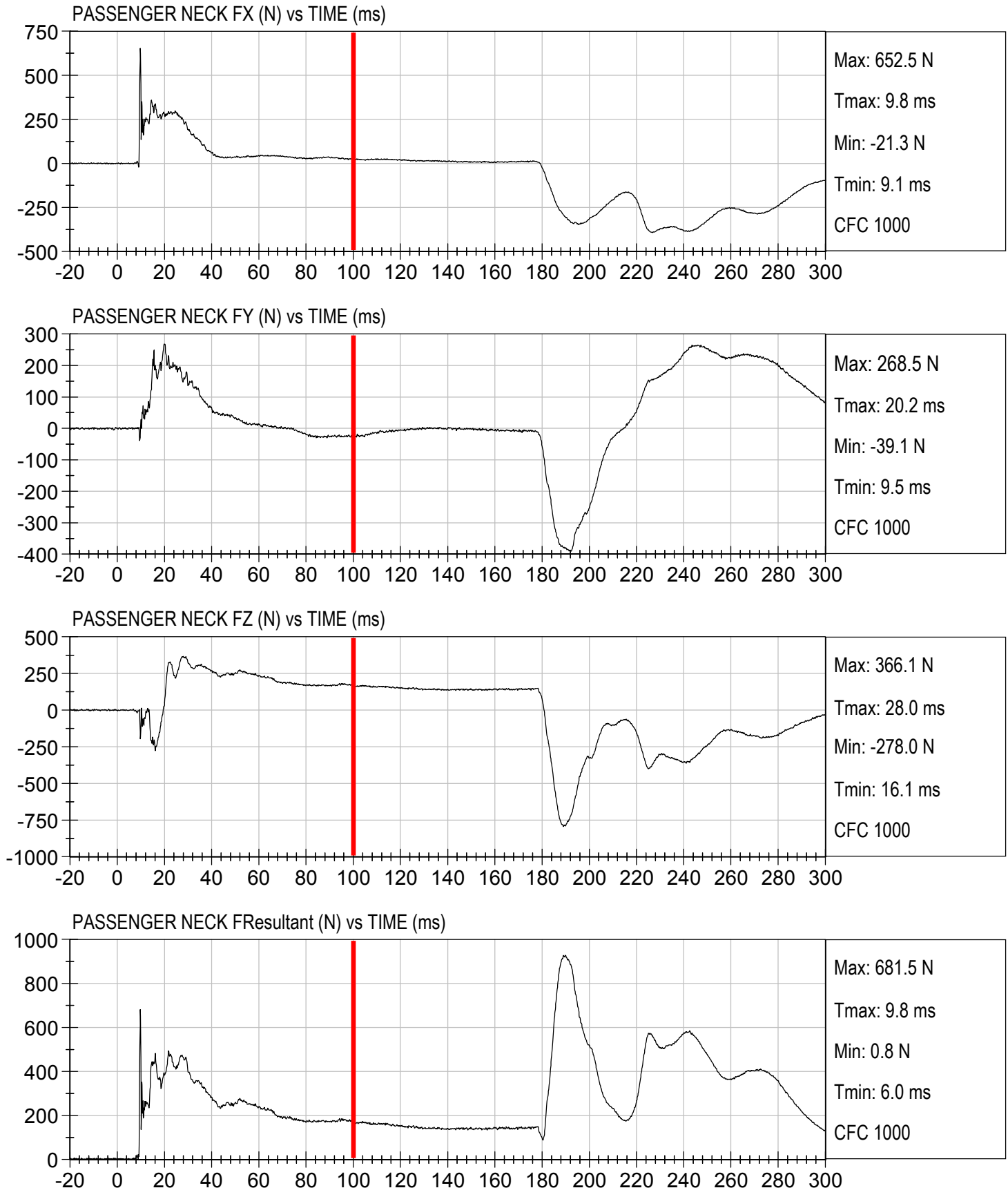
Injury Values Calculated between 0ms and 100ms



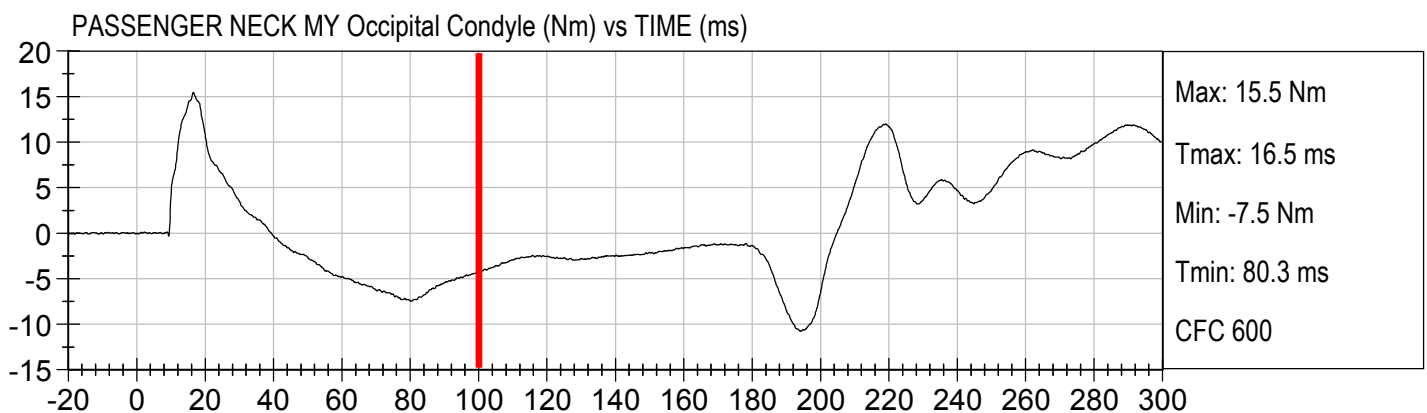
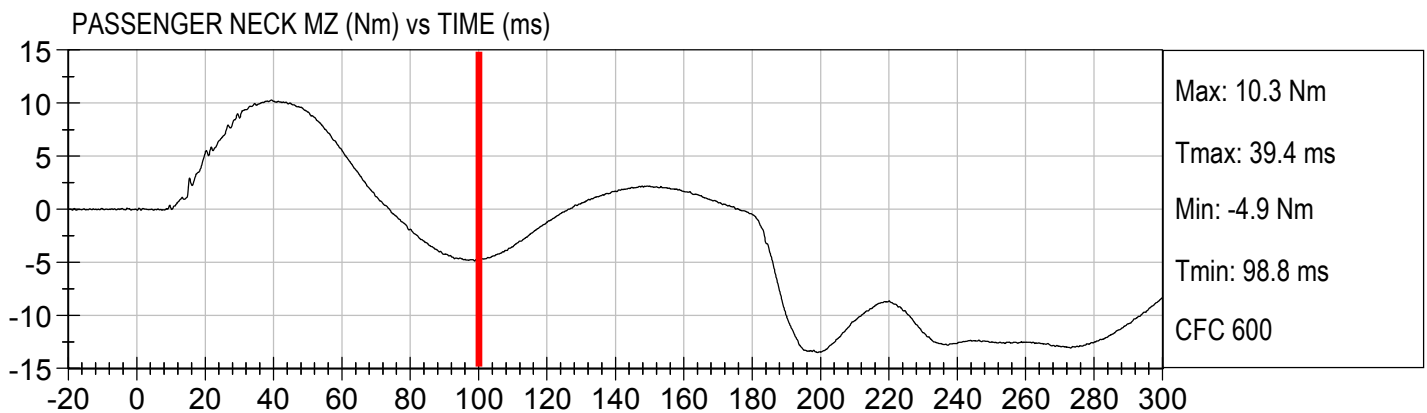
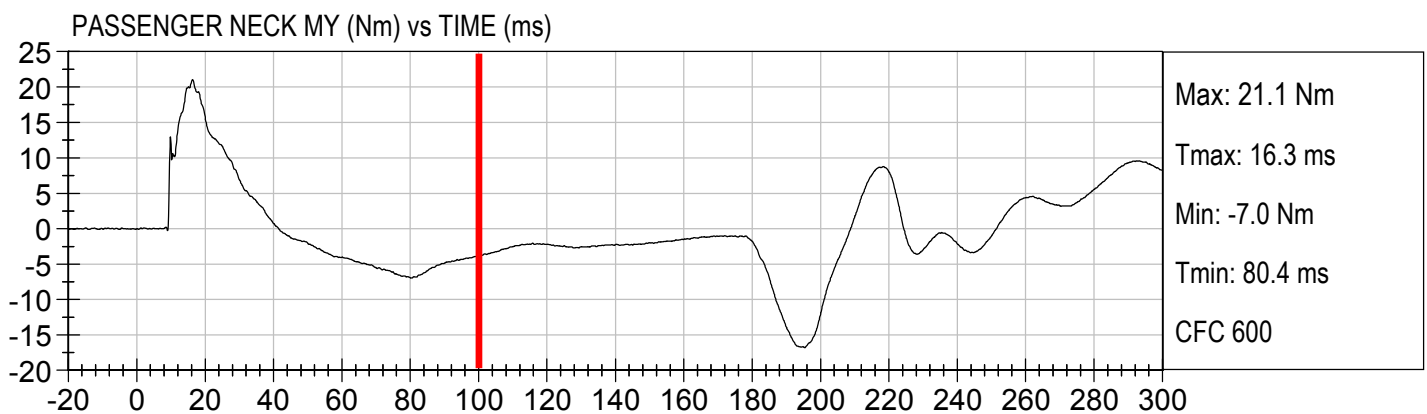
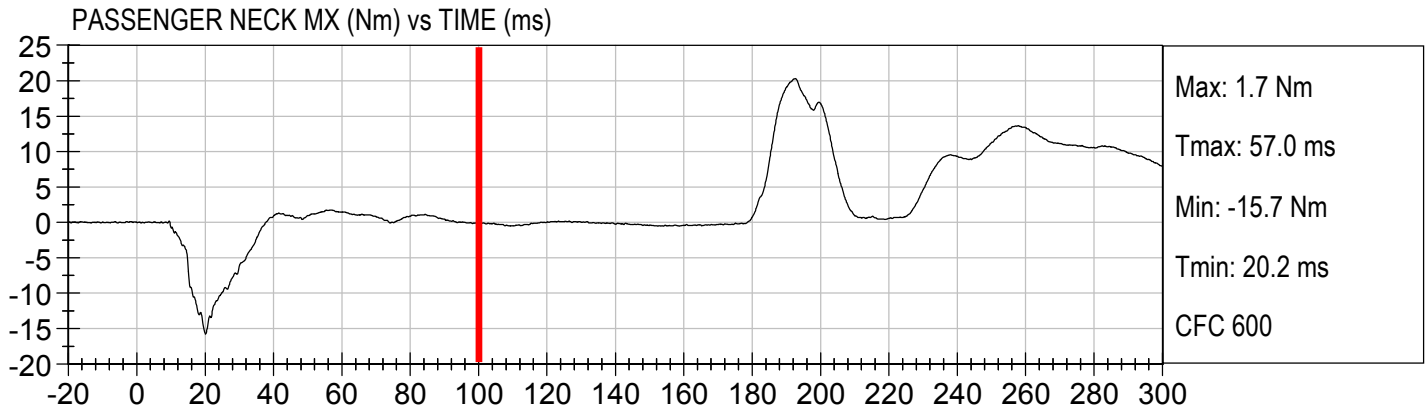
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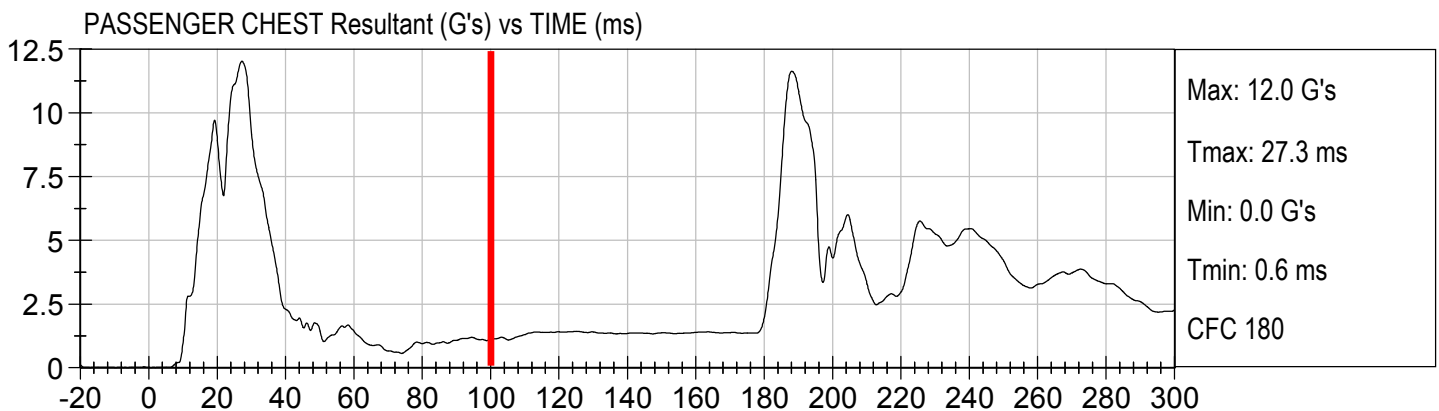
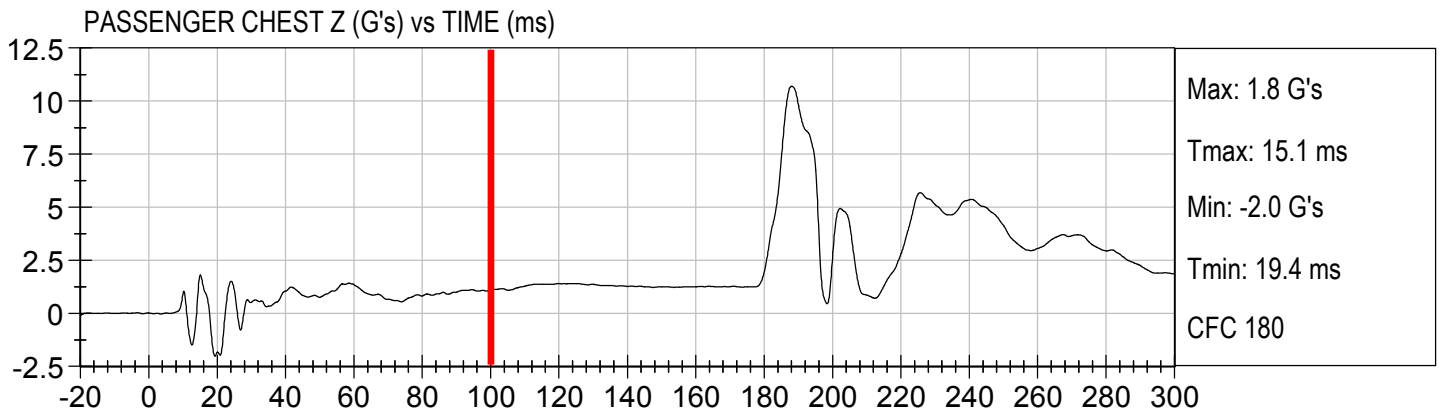
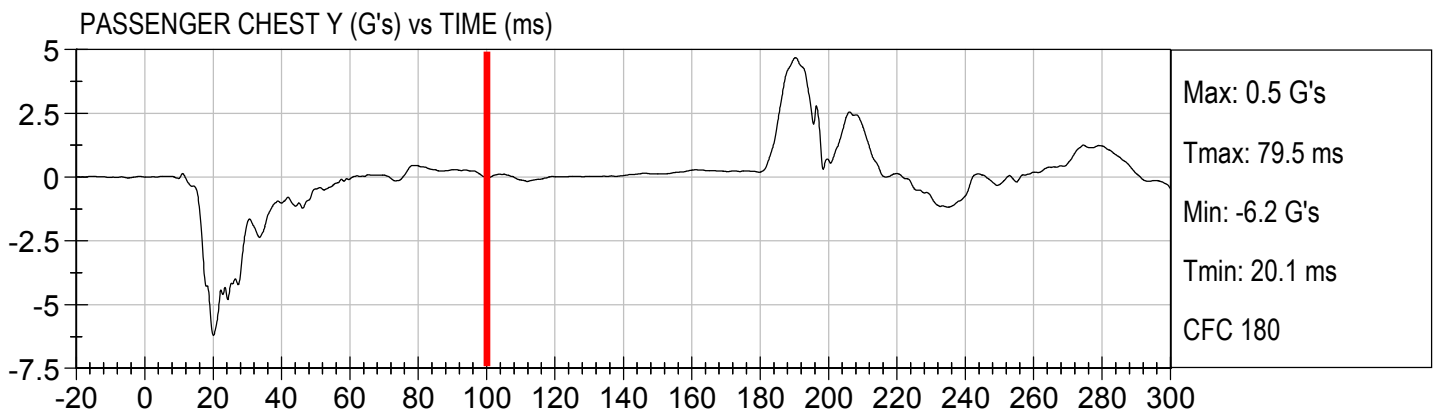
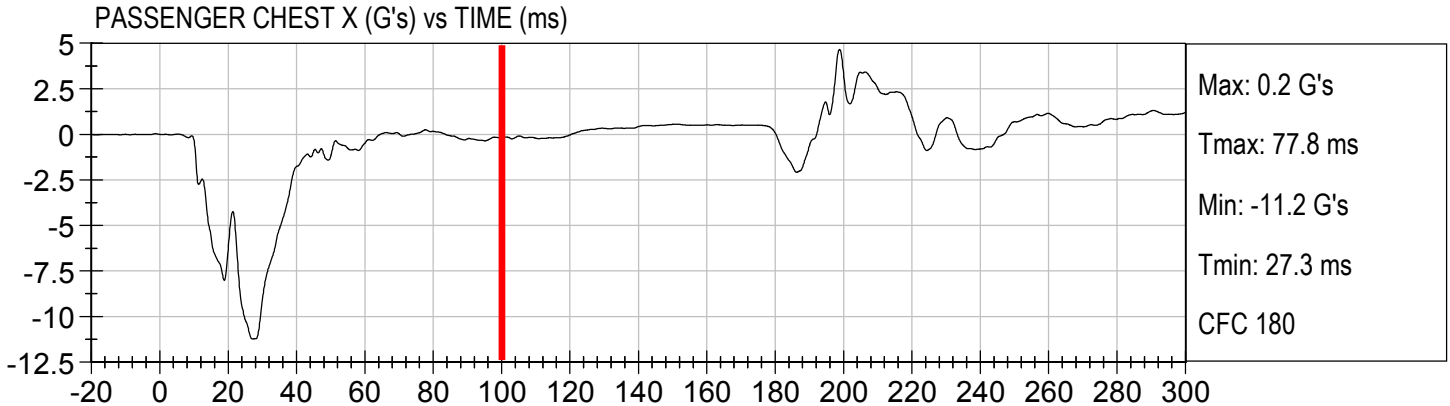
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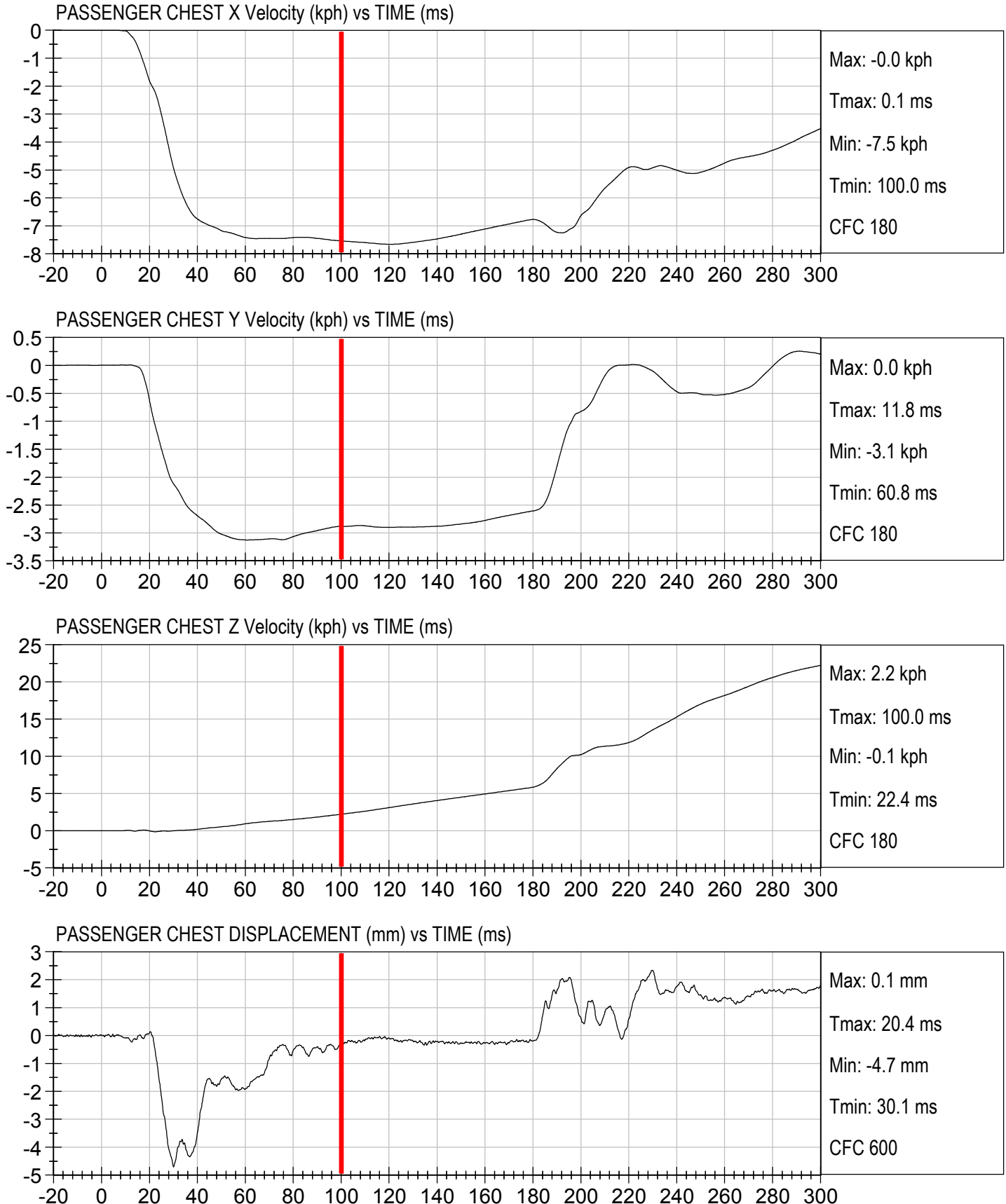
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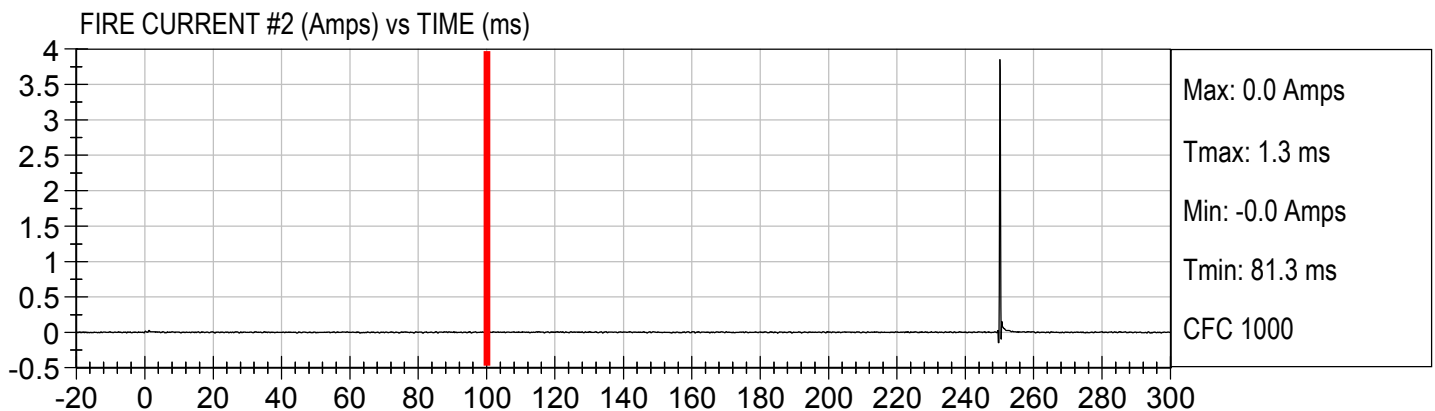
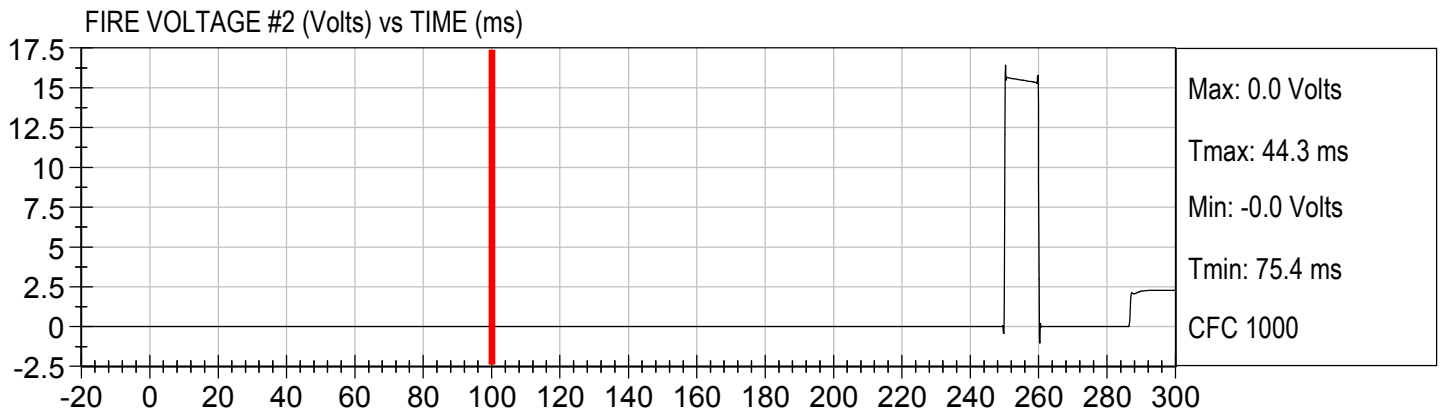
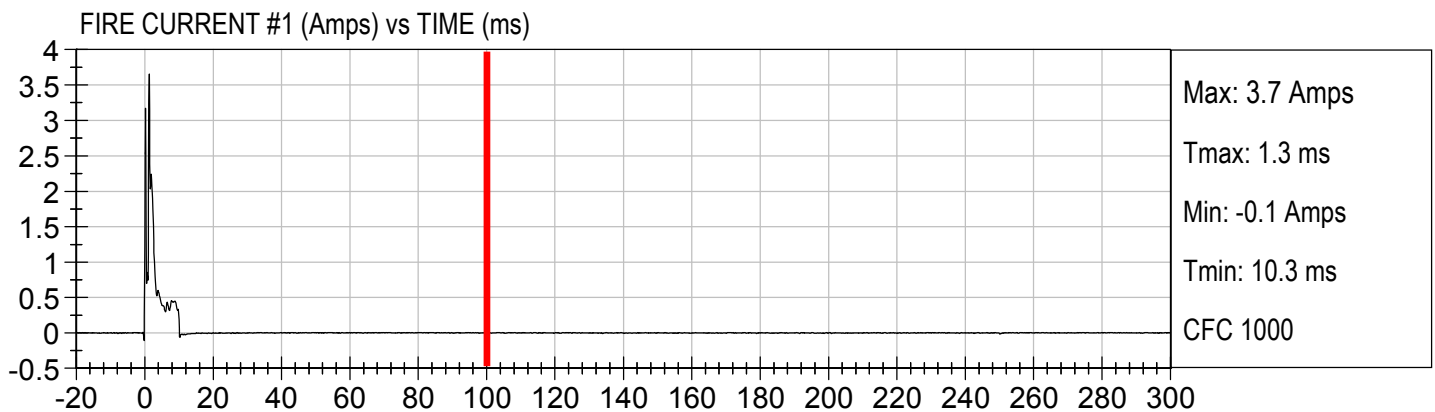
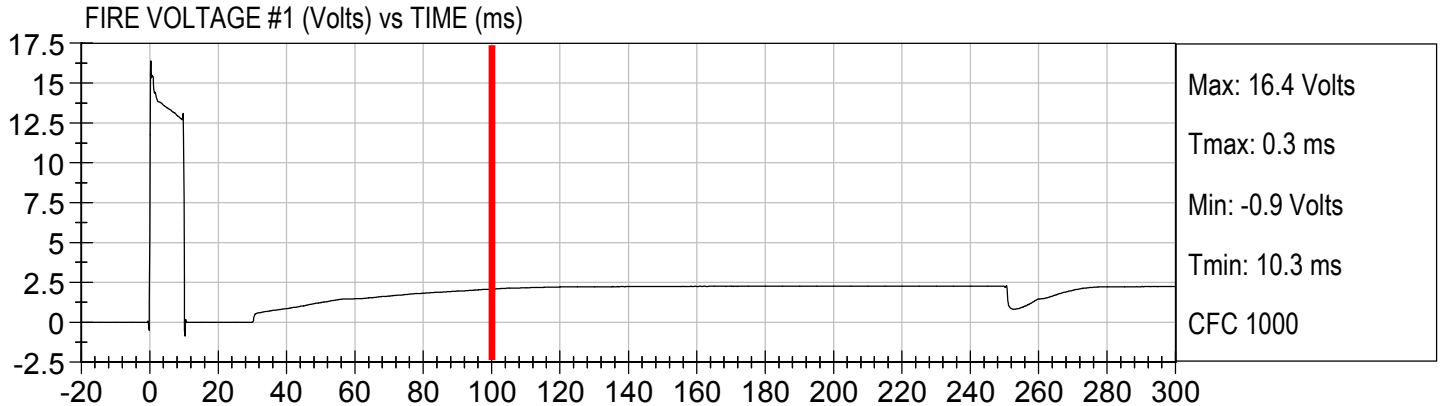
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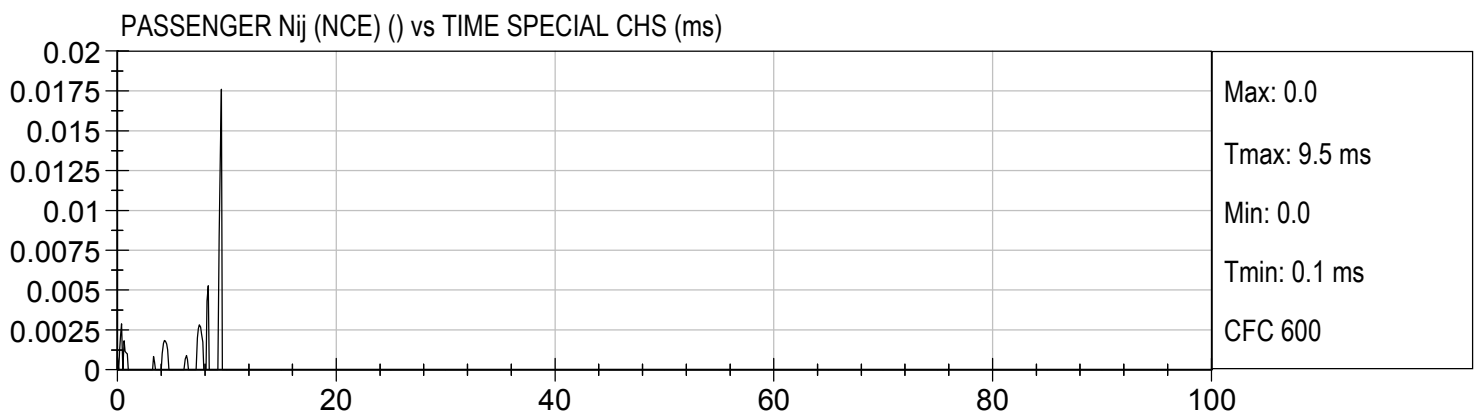
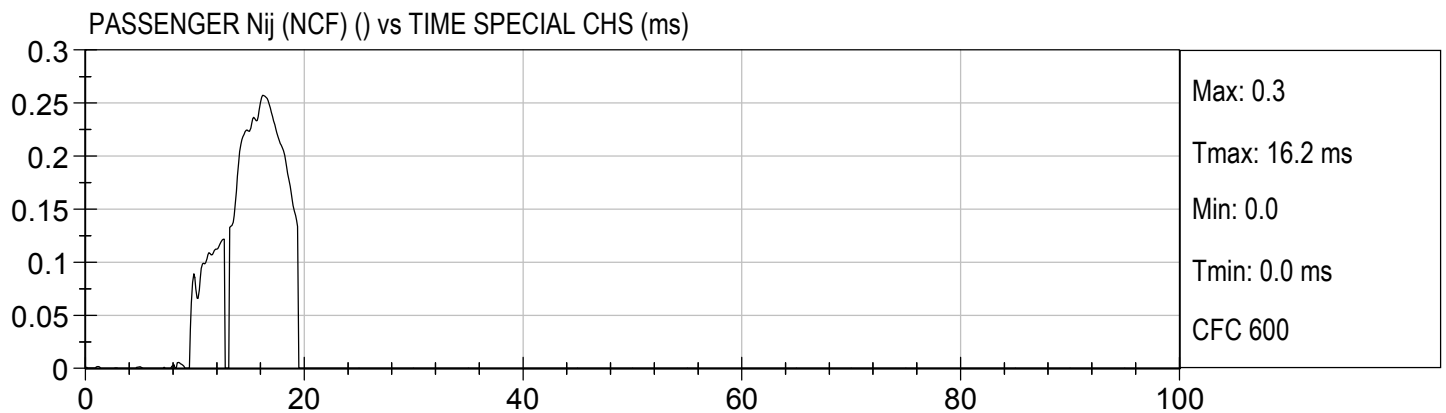
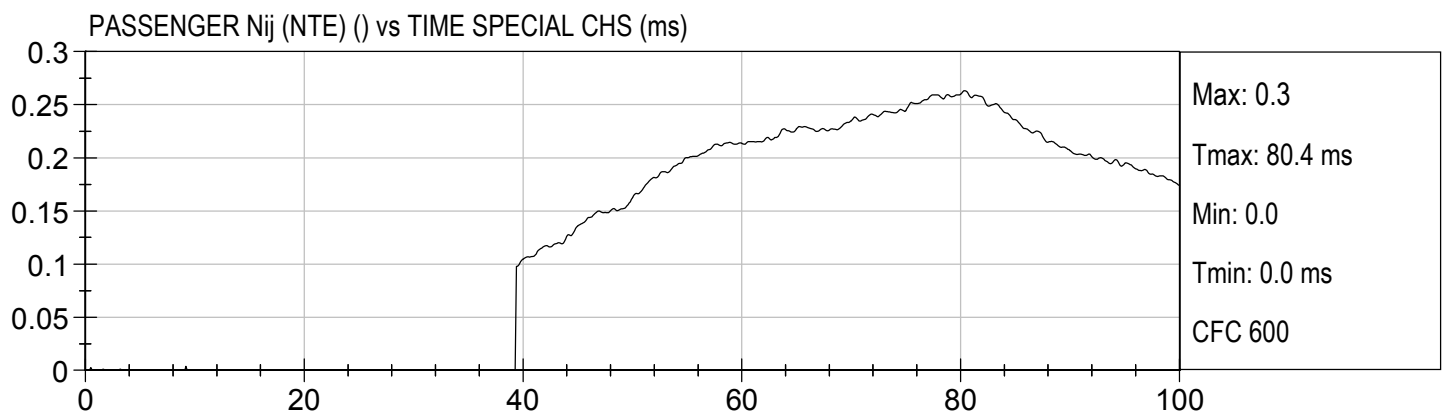
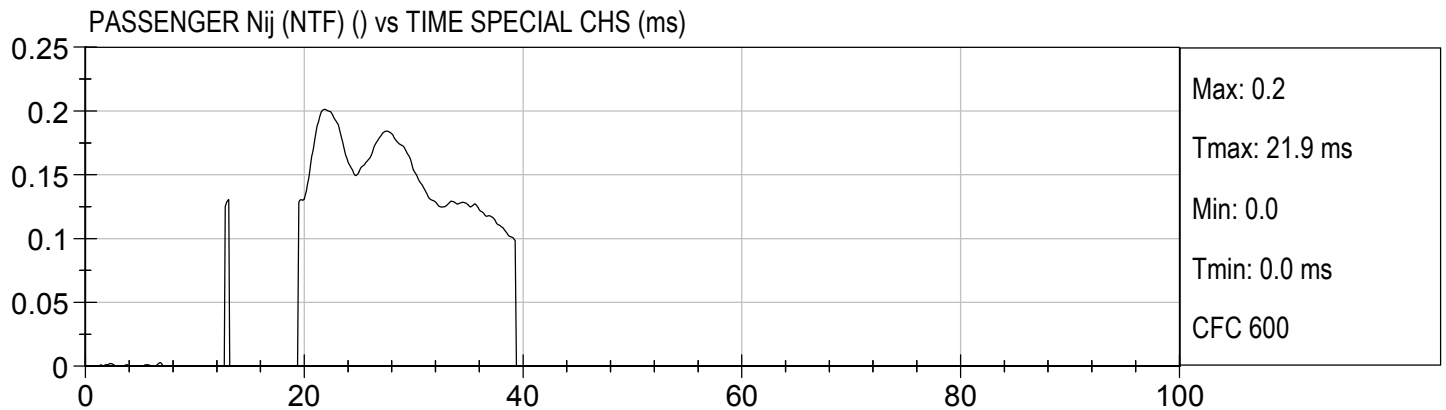
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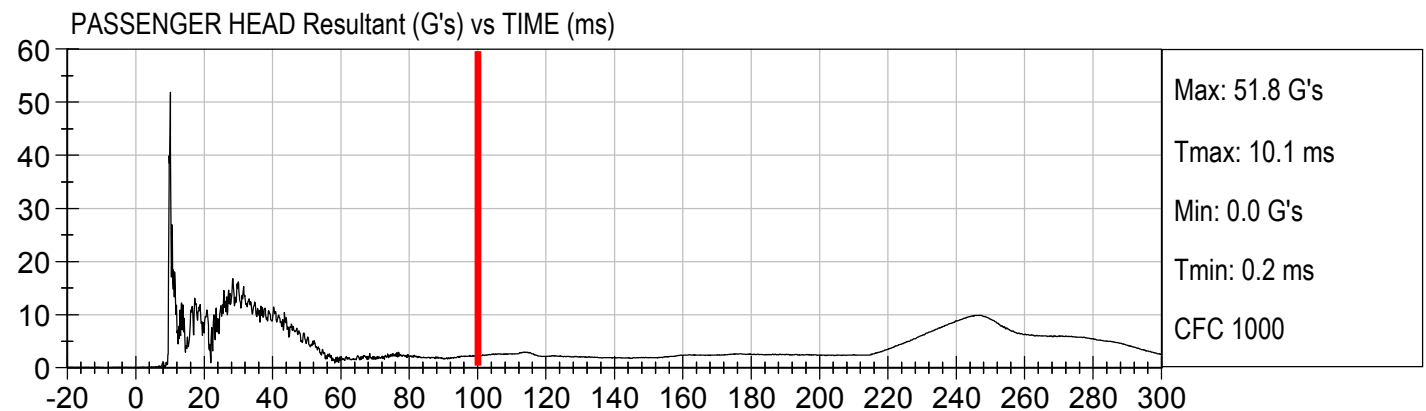
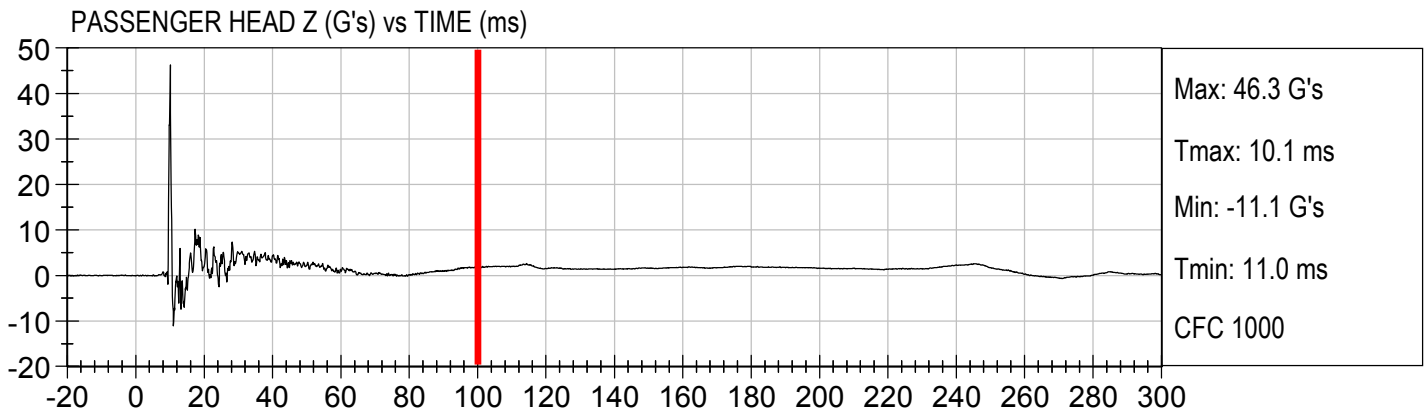
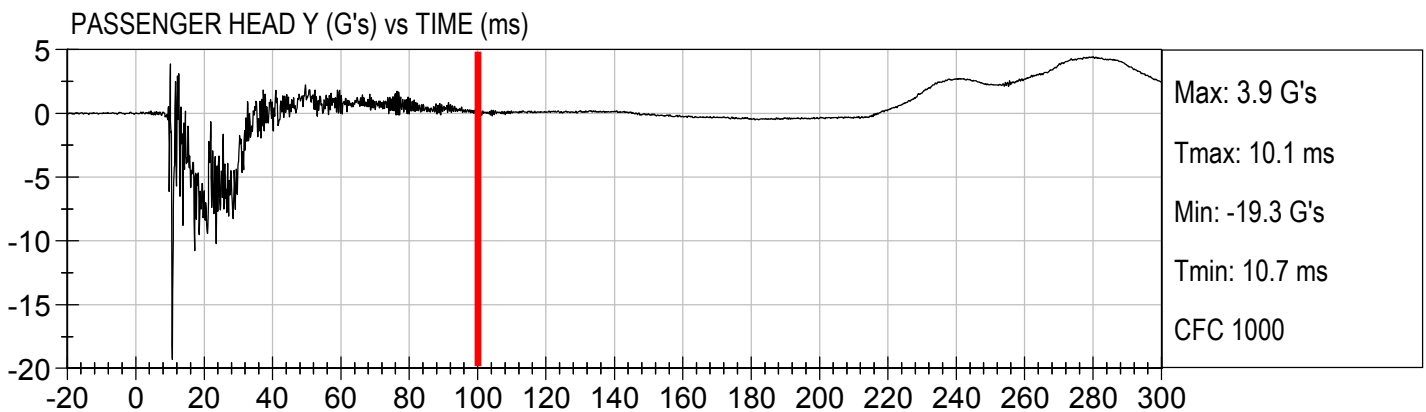
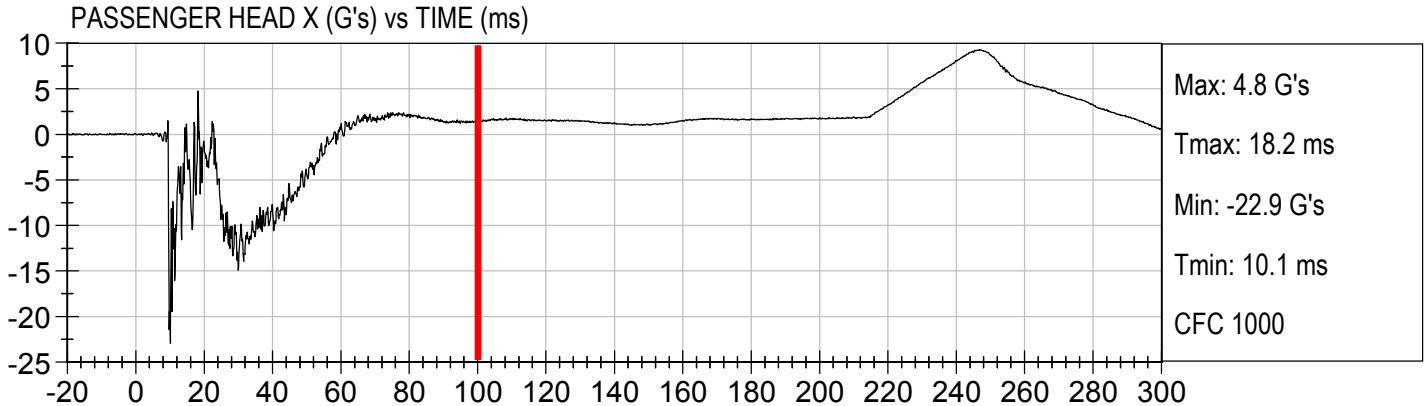
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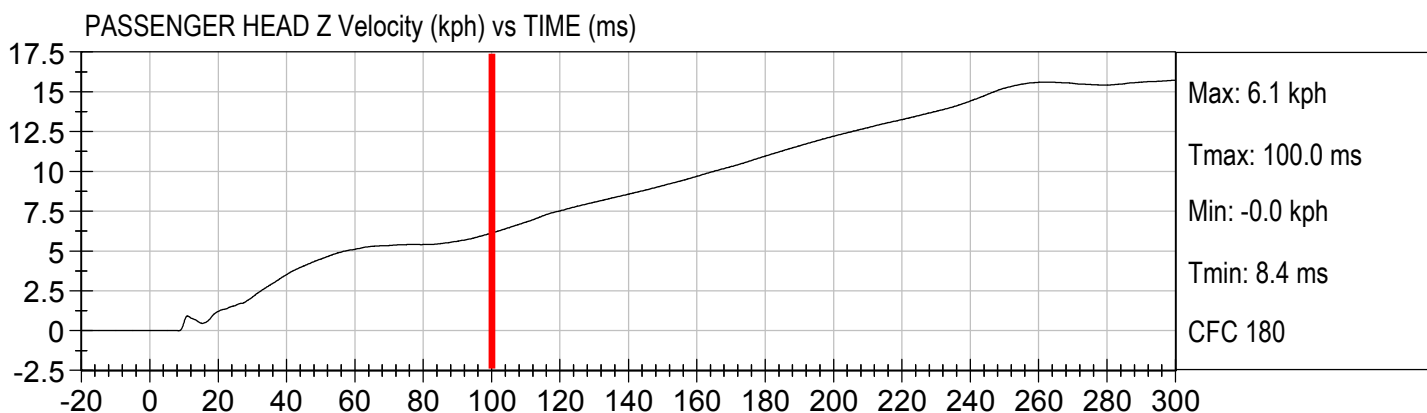
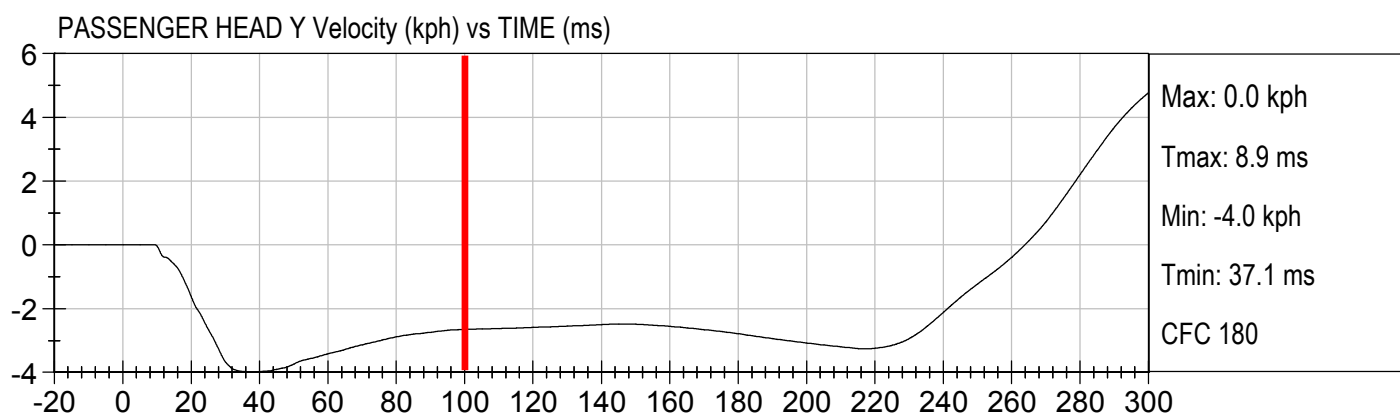
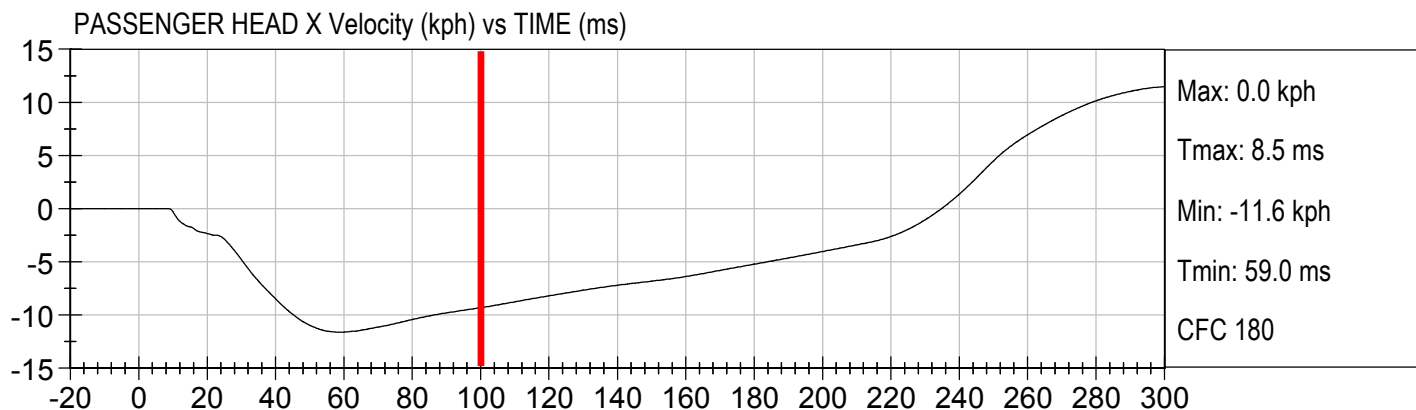




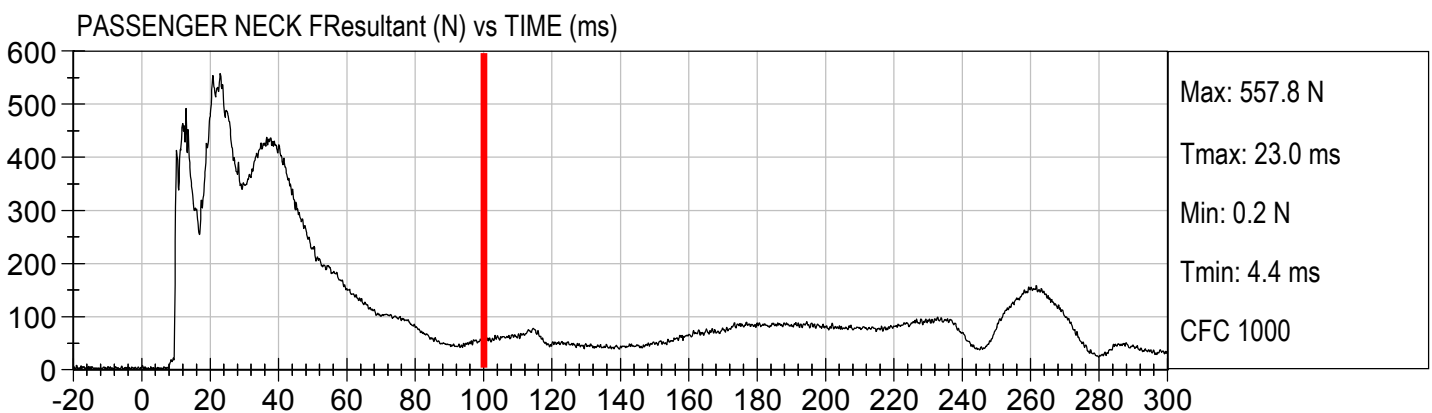
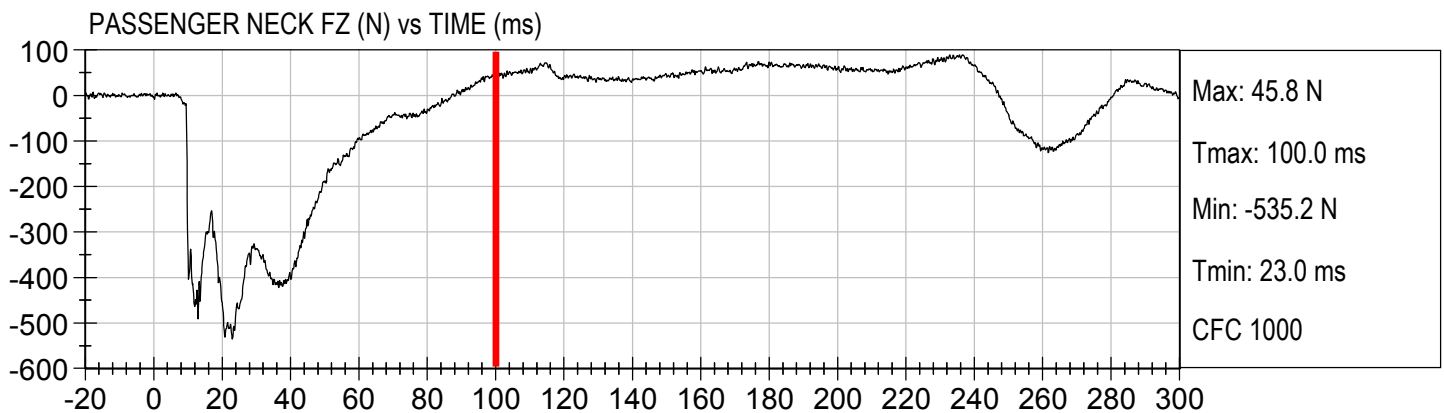
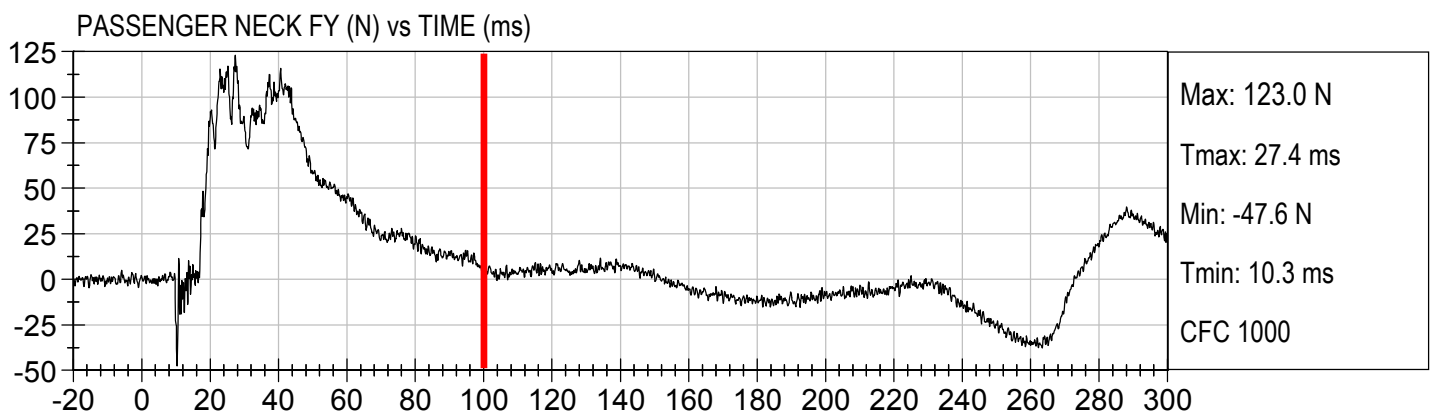
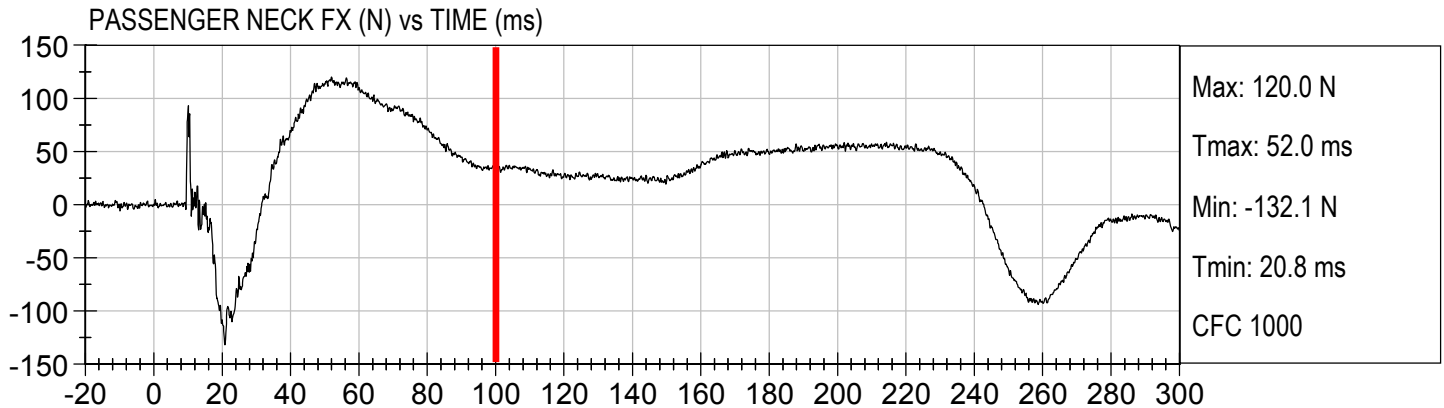
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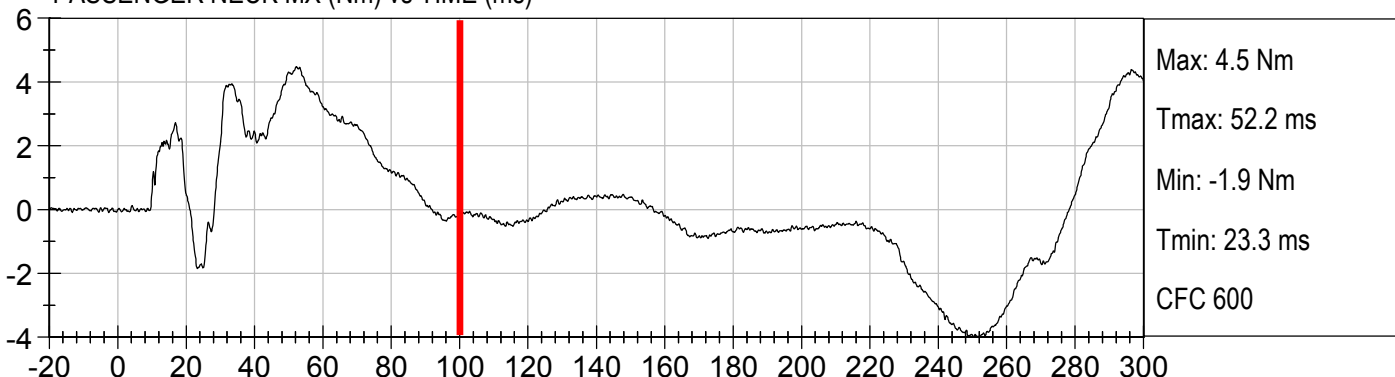


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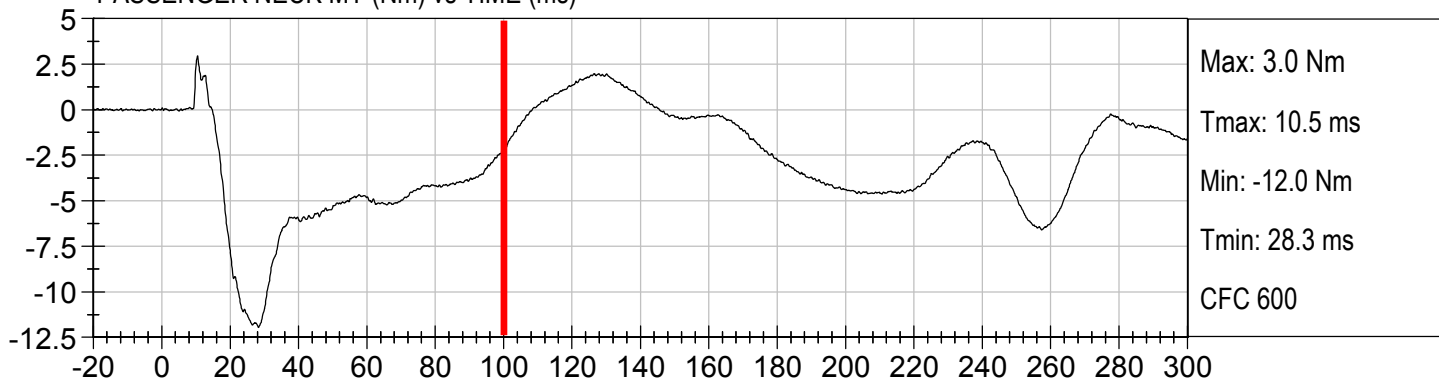


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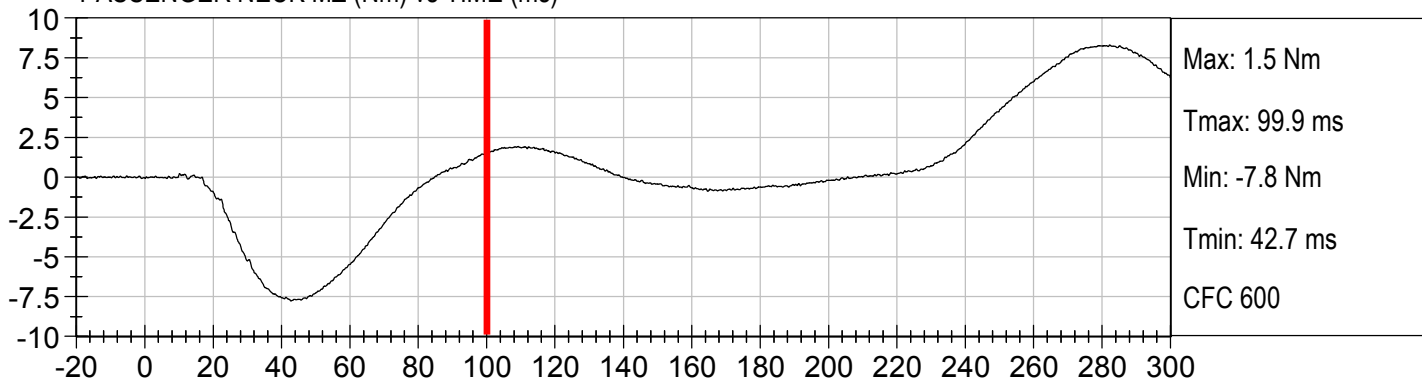
PASSENGER NECK MX (Nm) vs TIME (ms)



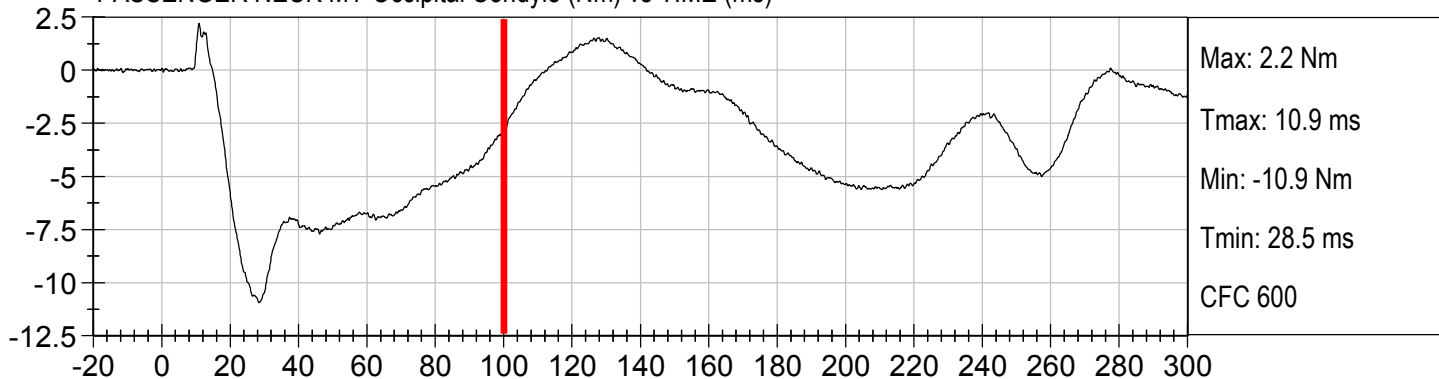
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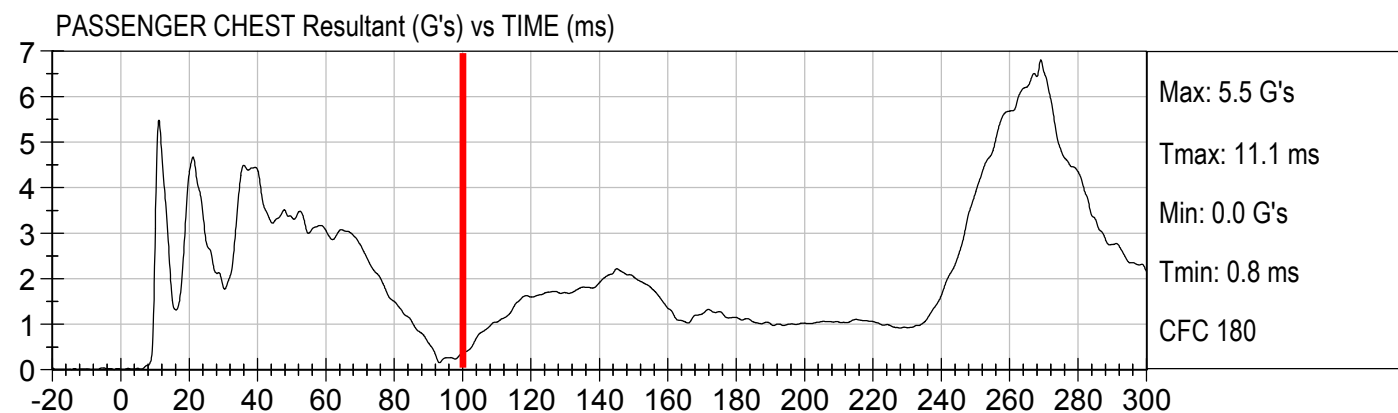
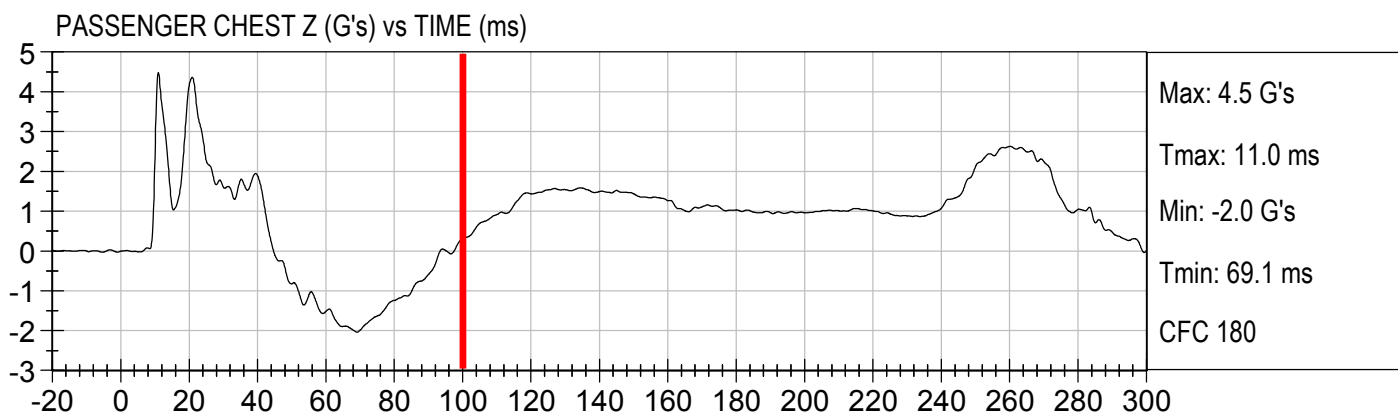
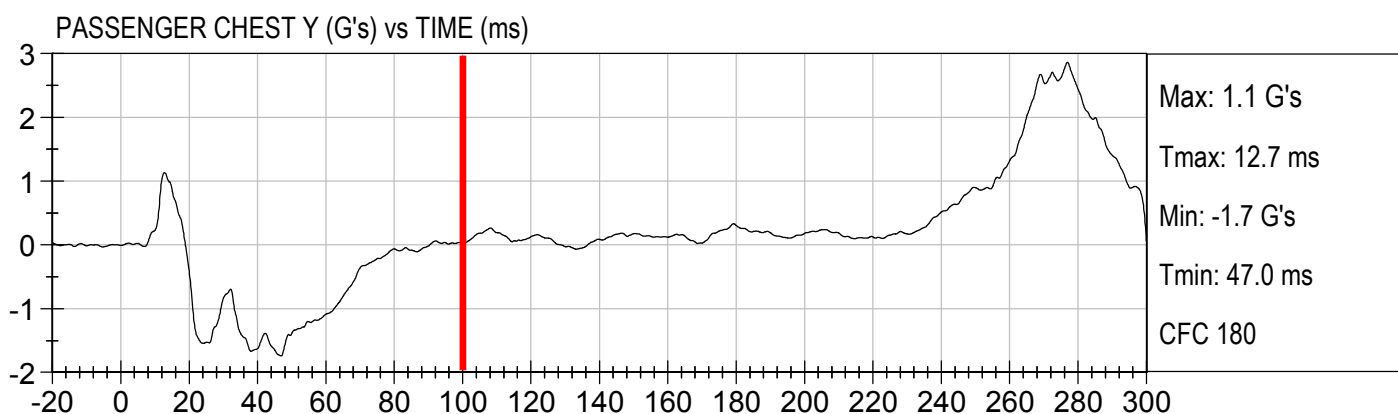
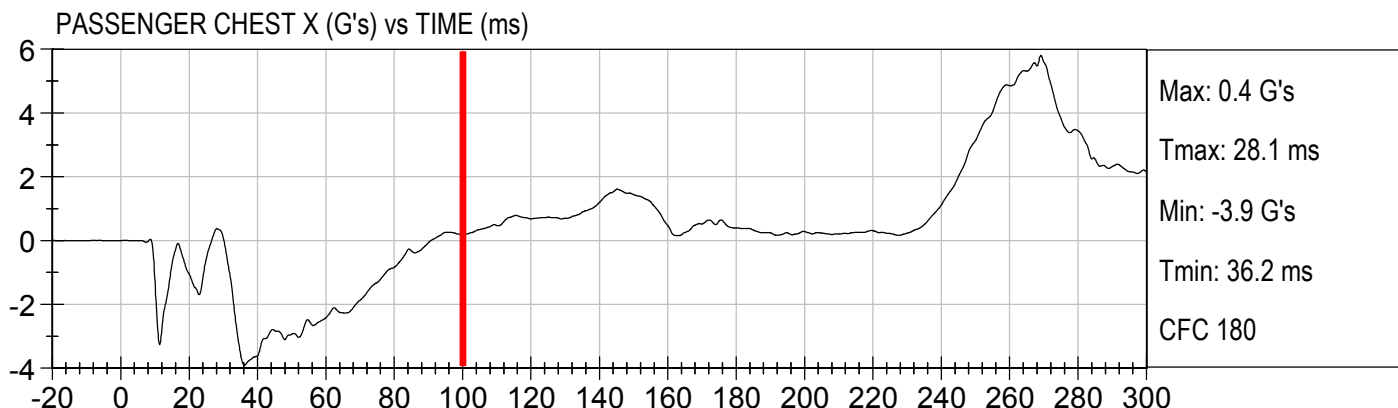
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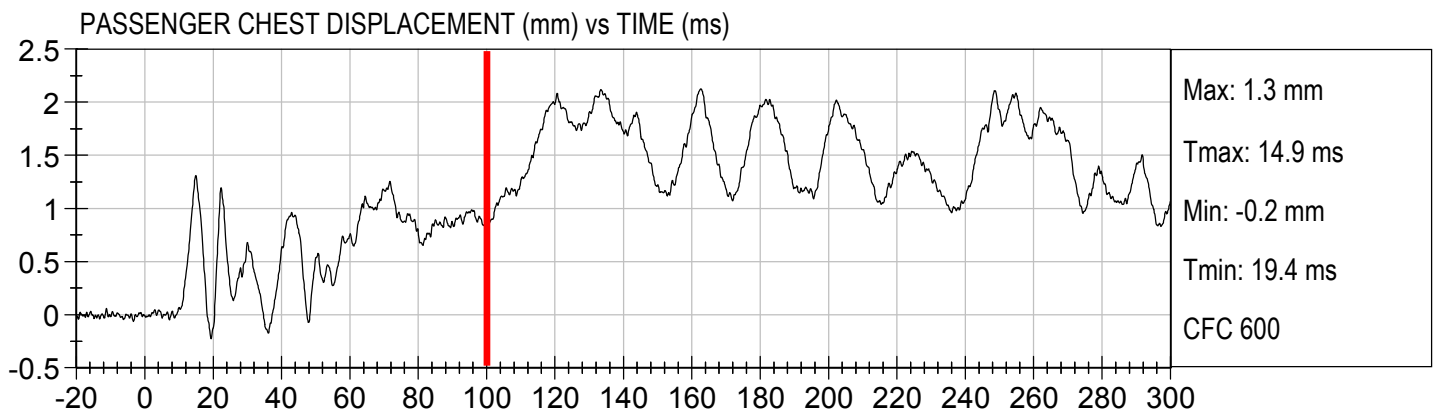
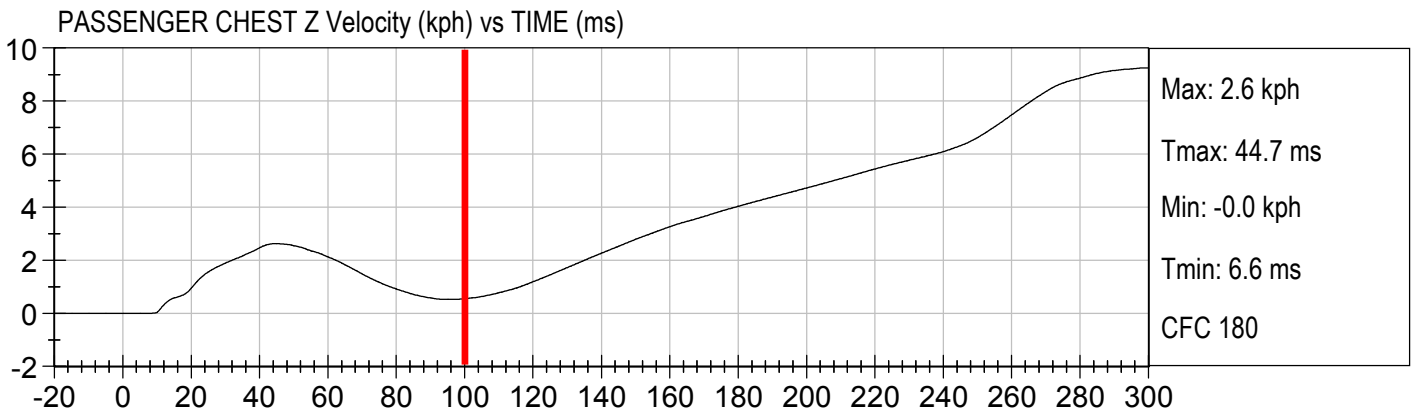
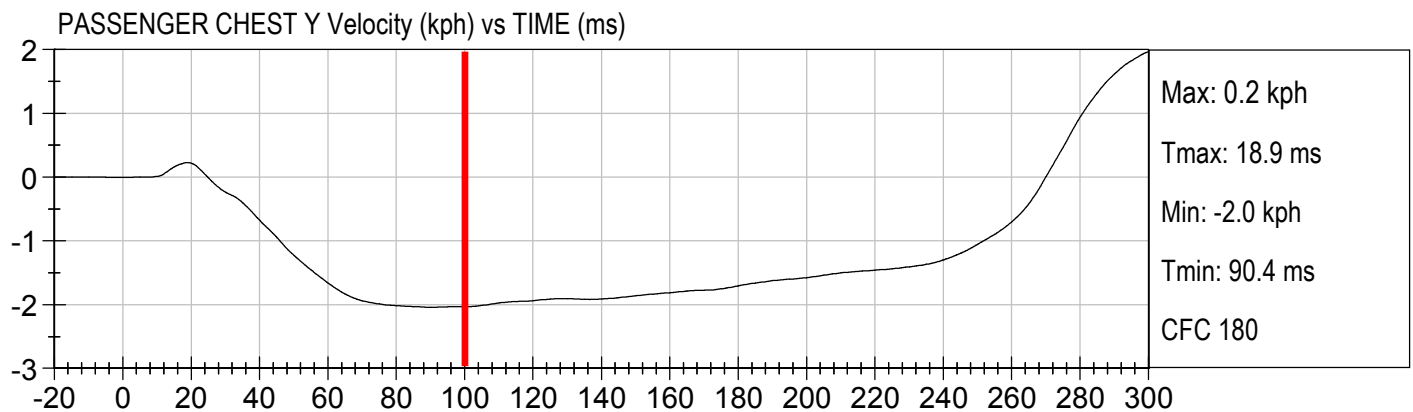
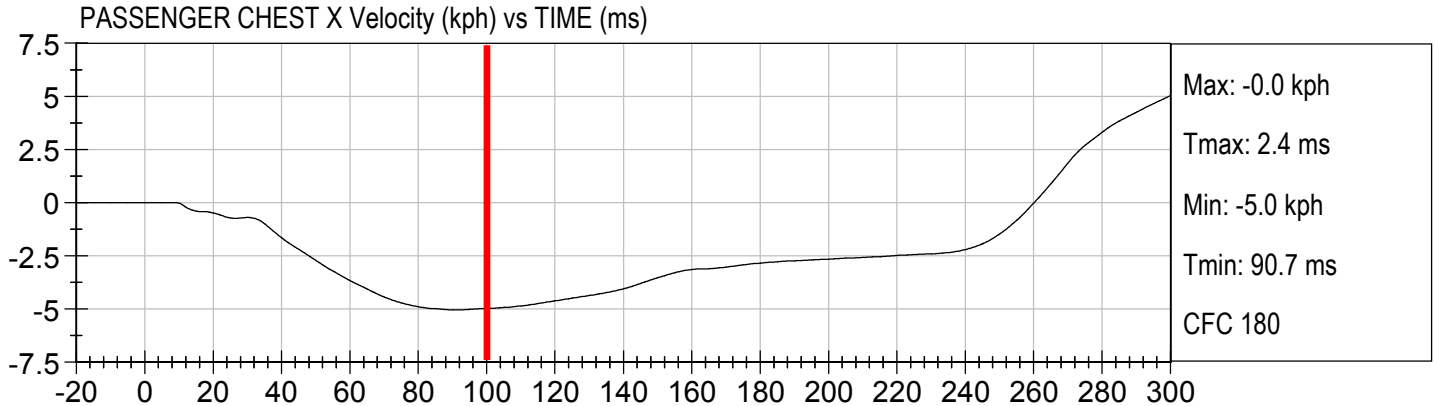
PASSENGER NECK MY Occipital Condyle (Nm) vs TIME (ms)



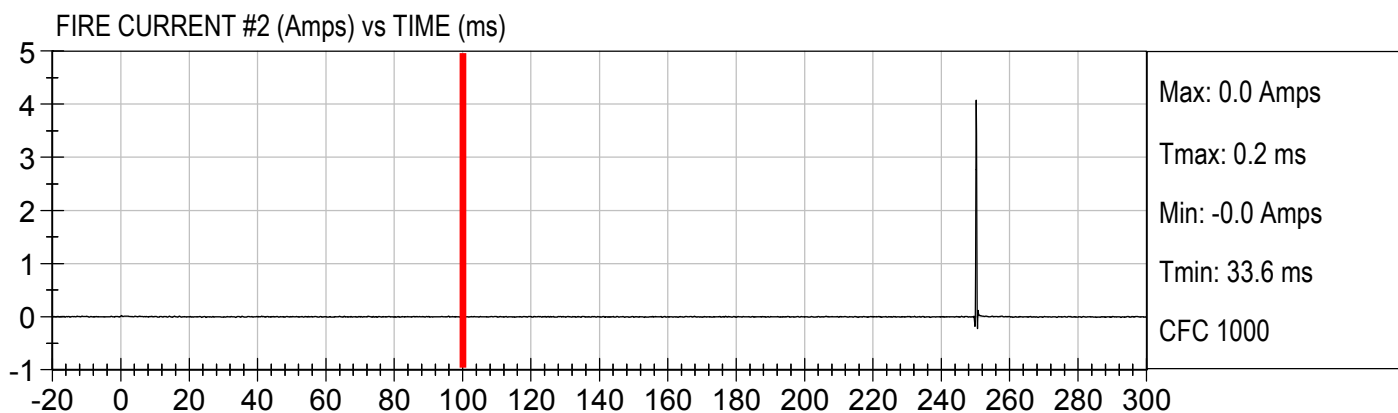
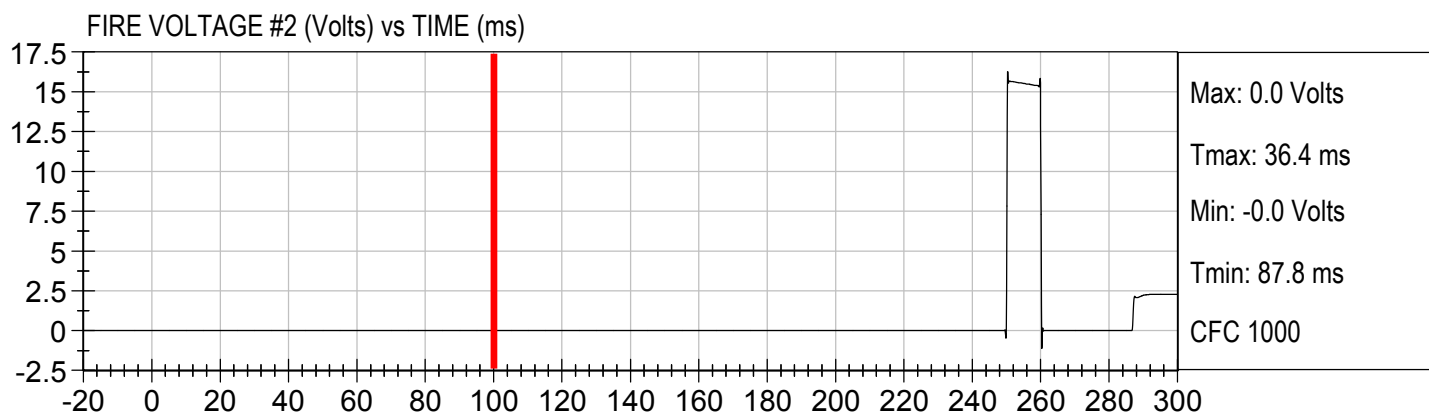
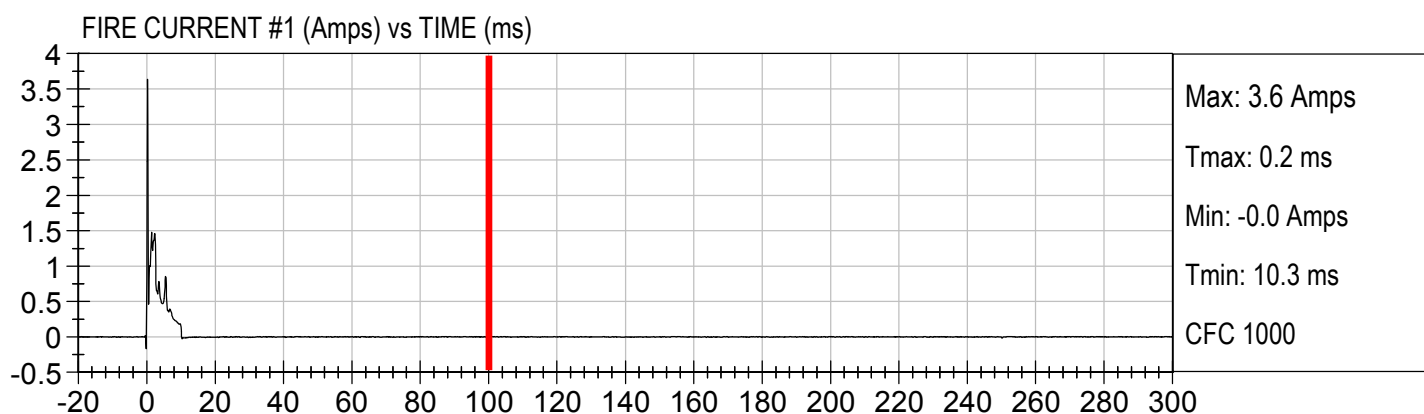
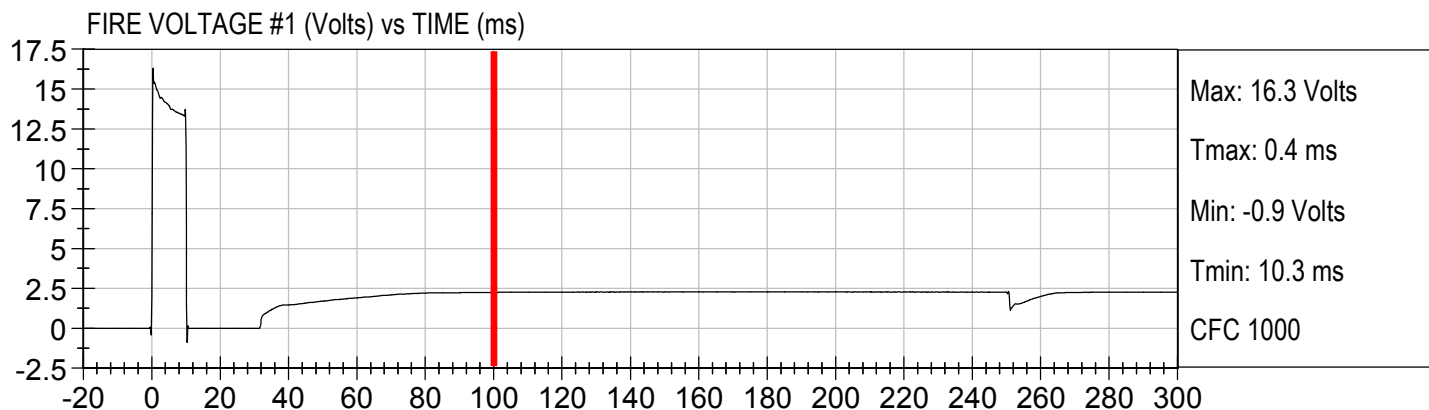
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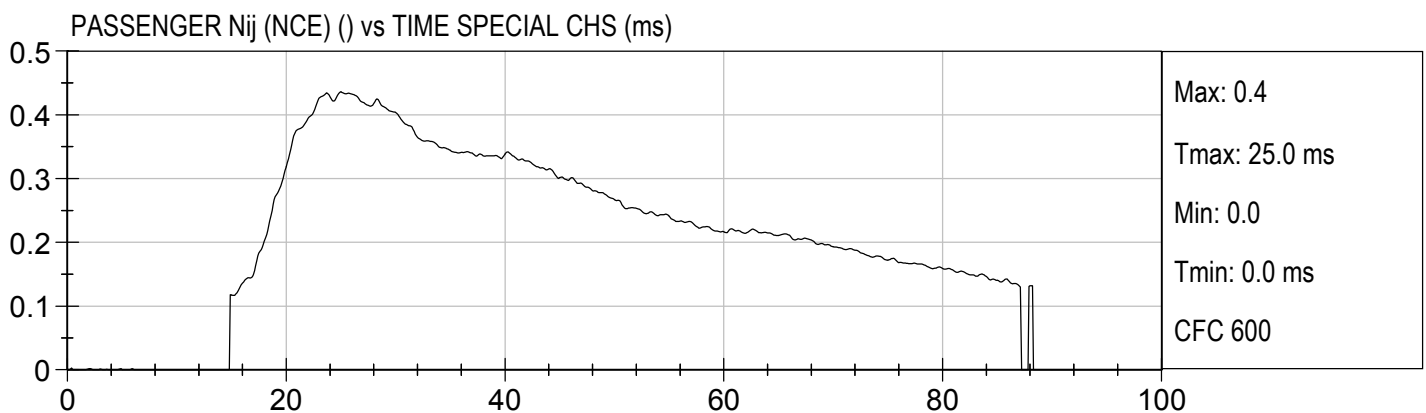
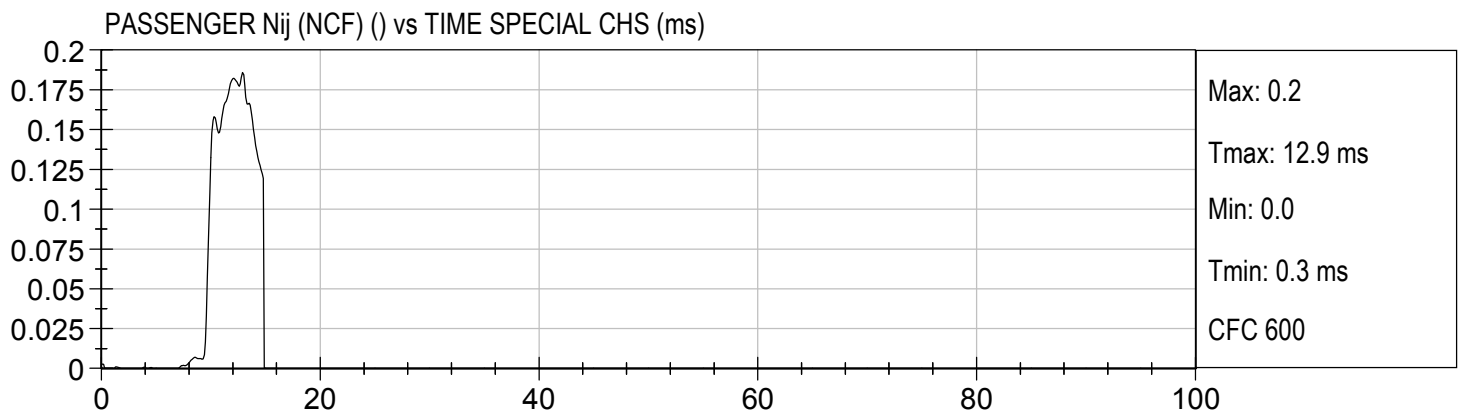
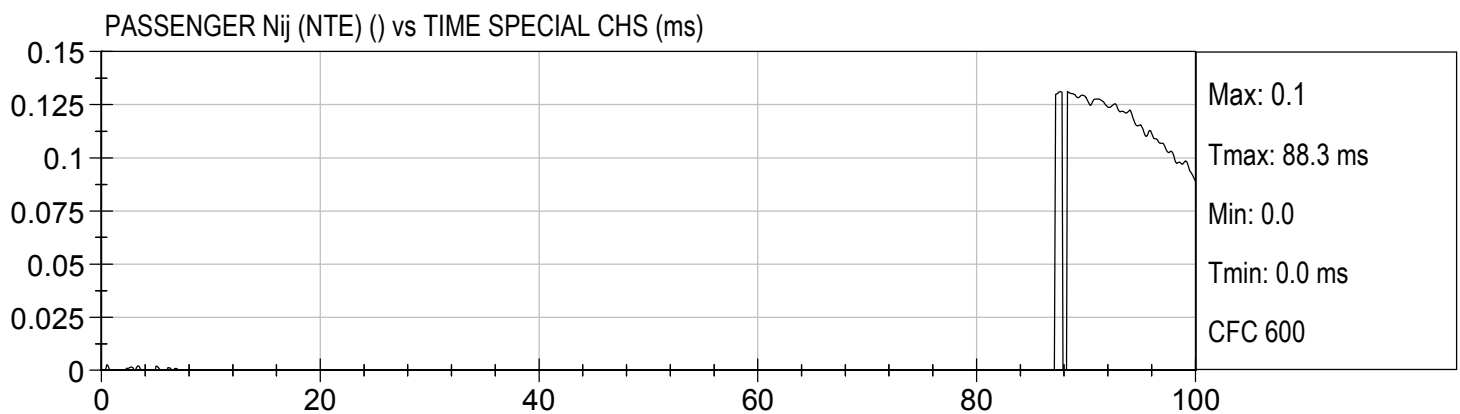
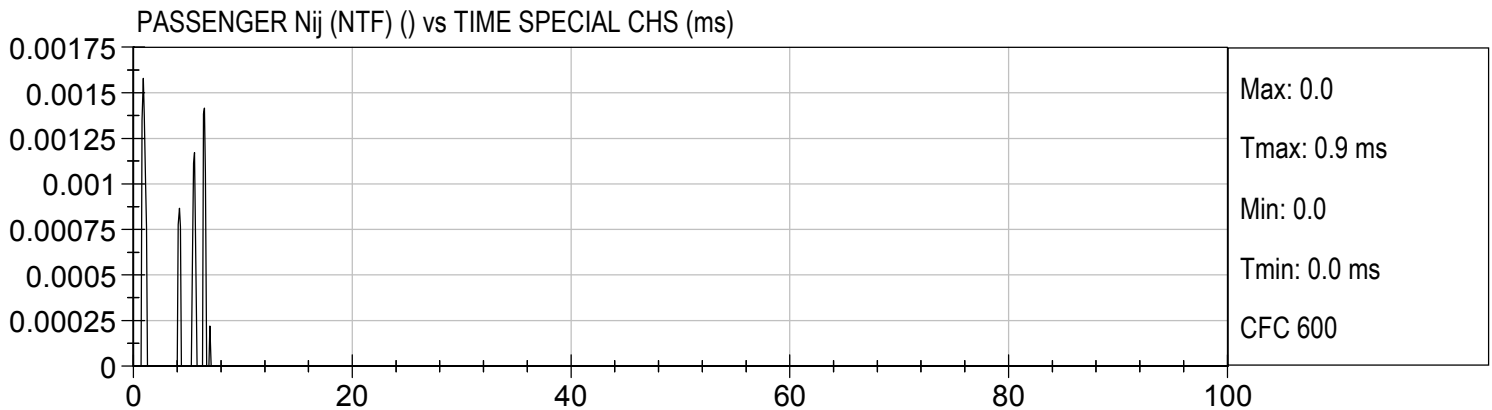
Injury Values Calculated between 0ms and 100ms



Injury Values Calculated between 0ms and 100ms







**APPENDIX C**

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**MFD BY BAYERISCHE MOTOREN WERKE AG**

09/15

GVWR 4396 lbs 1994 kg  
GAWR FRONT 2004 lbs 909 kg  
GAWR REAR 2524 lbs 1145 kg

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR  
VEHICLE SAFETY, BUMPER AND THEFT PREVENTION STANDARDS  
IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

**WBA8A9C50GK617082**

TYPE: PASSENGER CAR  
300i



7 315 814

Photo No. 1 - Vehicle Certification Label

6878671



**TIRE AND LOADING INFORMATION**  
**RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT**



SEATING CAPACITY NOMBRE DE PLACES	TOTAL 5	FRONT 2 AVANT	REAR 3 ARRIÈRE
--------------------------------------	---------	------------------	-------------------

The combined weight of occupants and cargo should never exceed 408 kg or 899 lbs.  
 Le poids total des occupants et du chargement ne doit jamais dépasser 408 kg ou 899 lb.

TIRE / PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION DES PNEUS A FROID	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION  VOIR LE MANUEL DE L'USAGER POUR PLUS DE RENSEIGNEMENTS
FRONT / AVANT	225/50 R 17	220 KPA, 32 PSI	
REAR / ARRIÈRE	225/50 R 17	220 KPA, 32 PSI	
SPARE DE SECOURS	NONE	NONE KPA, NONE PSI	

Photo No. 2 - Tire Placard





Photo No. 3 - Pre-Test Front View of Test Vehicle



Photo No. 4 - Post-Test Front View of Test Vehicle



Photo No. 5 - Pre-Test Left Side View of Test Vehicle





Photo No. 6 - Post-Test Left Side View of Test Vehicle



Photo No. 7 - Pre-Test Right Side View of Test Vehicle



Photo No. 8 - Post-Test Right Side View of Test Vehicle





Photo No. 9 - Pre-Test Left Front Three-Quarter View of Test Vehicle

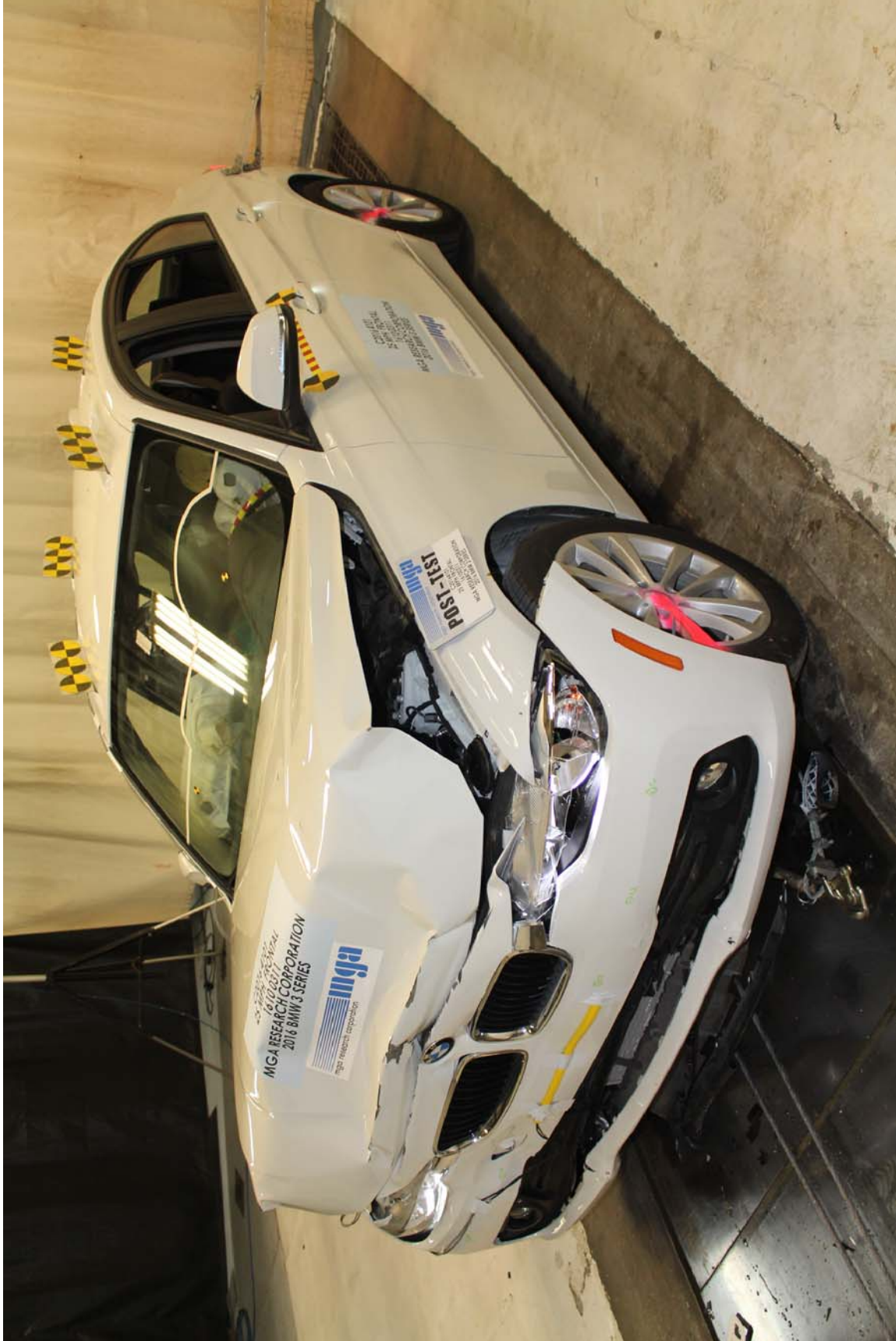


Photo No. 10 - Post-Test Left Front Three-Quarter View of Test Vehicle



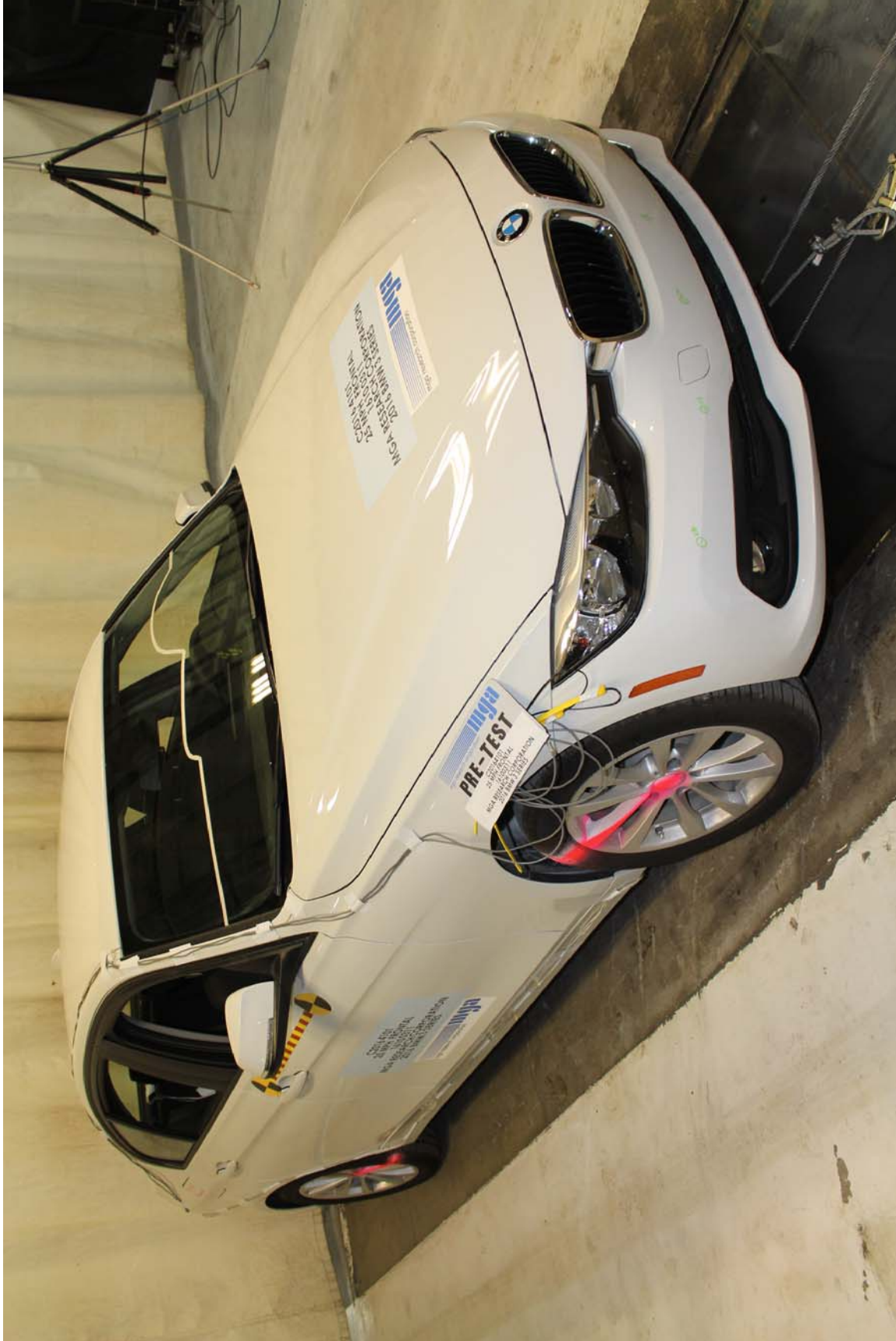


Photo No. 11 - Pre-Test Right Front Three-Quarter View of Test Vehicle







Photo No. 13 - Pre-Test Right Rear Three-Quarter View of Test Vehicle





Photo No. 14 - Post-Test Right Rear Three-Quarter View of Test Vehicle



Photo No. 15 - Pre-Test Left Rear Three-Quarter View of Test Vehicle



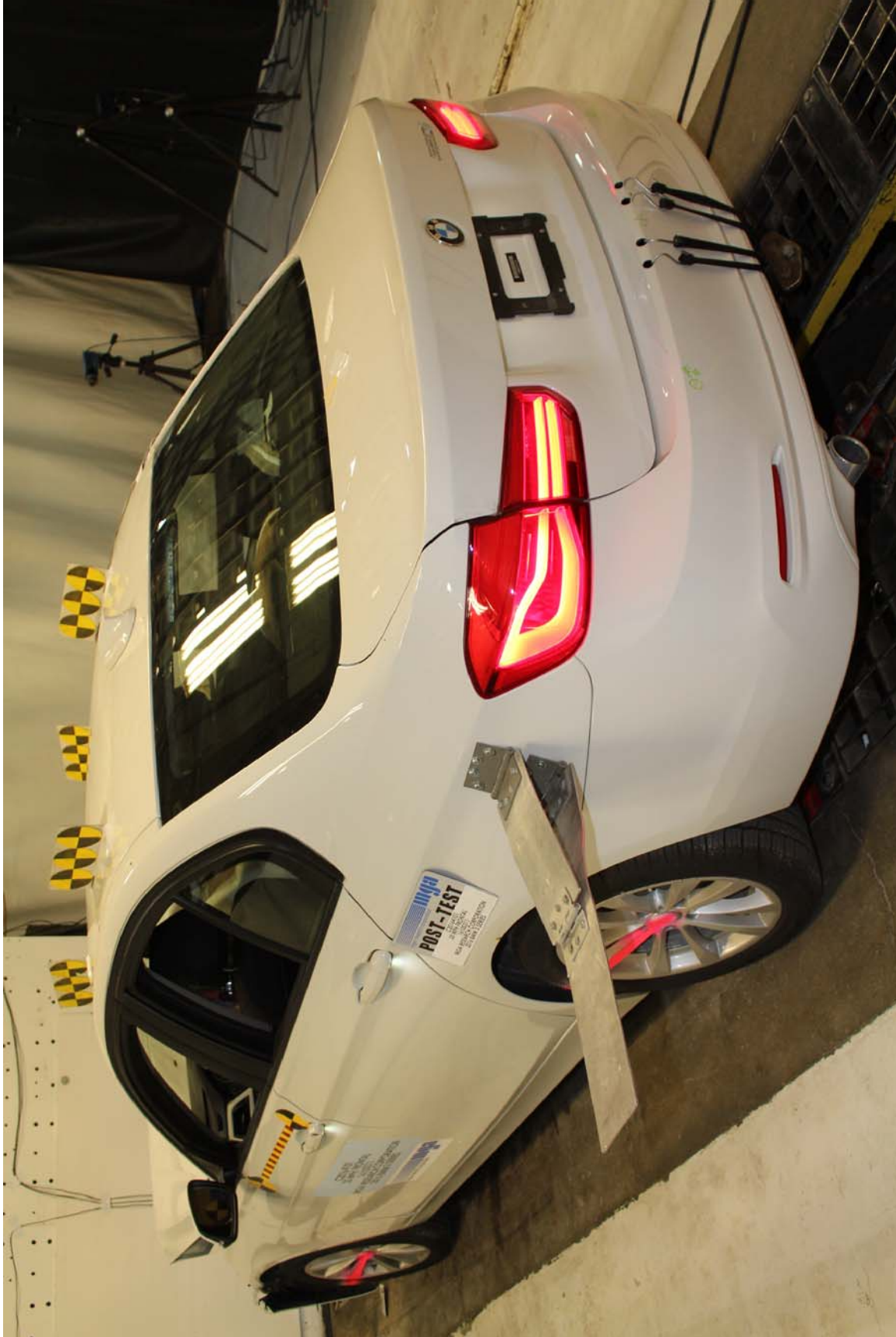


Photo No. 16 - Post-Test Left Rear Three-Quarter View of Test Vehicle



Photo No. 17 - Pre-Test Rear View of Test Vehicle



Photo No. 18 - Post-Test Rear View of Test Vehicle





Photo No. 19 - Pre-Test Windshield View



Photo No. 20 - Post-Test Windshield View



Photo No. 21 - Pre-Test Engine Compartment View





Photo No. 22 - Post-Test Engine Compartment View



Photo No. 23 - Pre-Test Fuel Filler Cap View



Photo No. 24 - Post-Test Fuel Filler Cap View



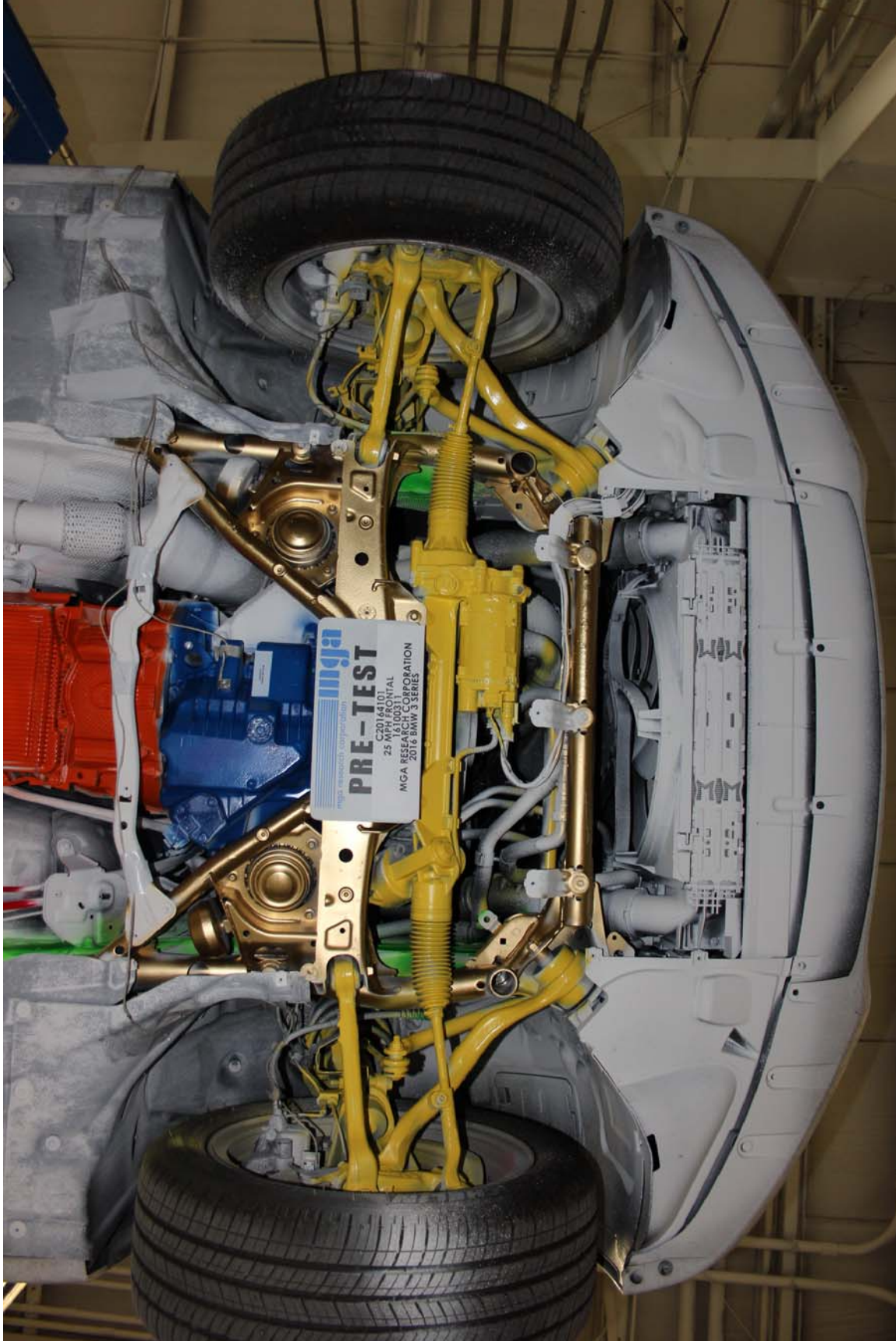


Photo No. 25 - Pre-Test Front Underbody View



Photo No. 26 - Post-Test Front Underbody View





Photo No. 27 - Pre-Test Mid Underbody View



Photo No. 28 - Post-Test Mid Underbody View



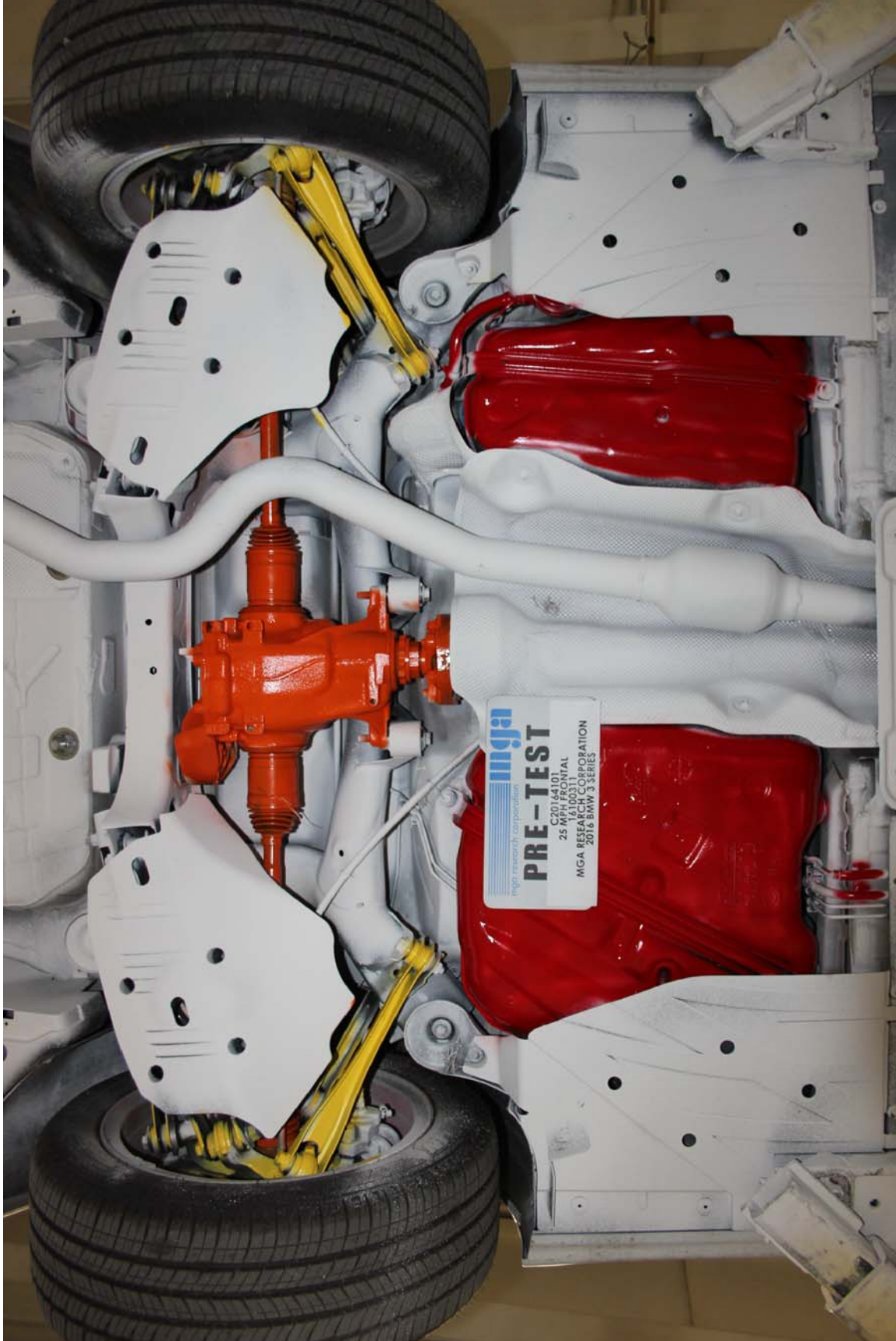


Photo No. 29 - Pre-Test Mid Rear Underbody View





Photo No. 30 - Post-Test Mid Rear Underbody View



Photo No. 31 - Pre-Test Rear Underbody View



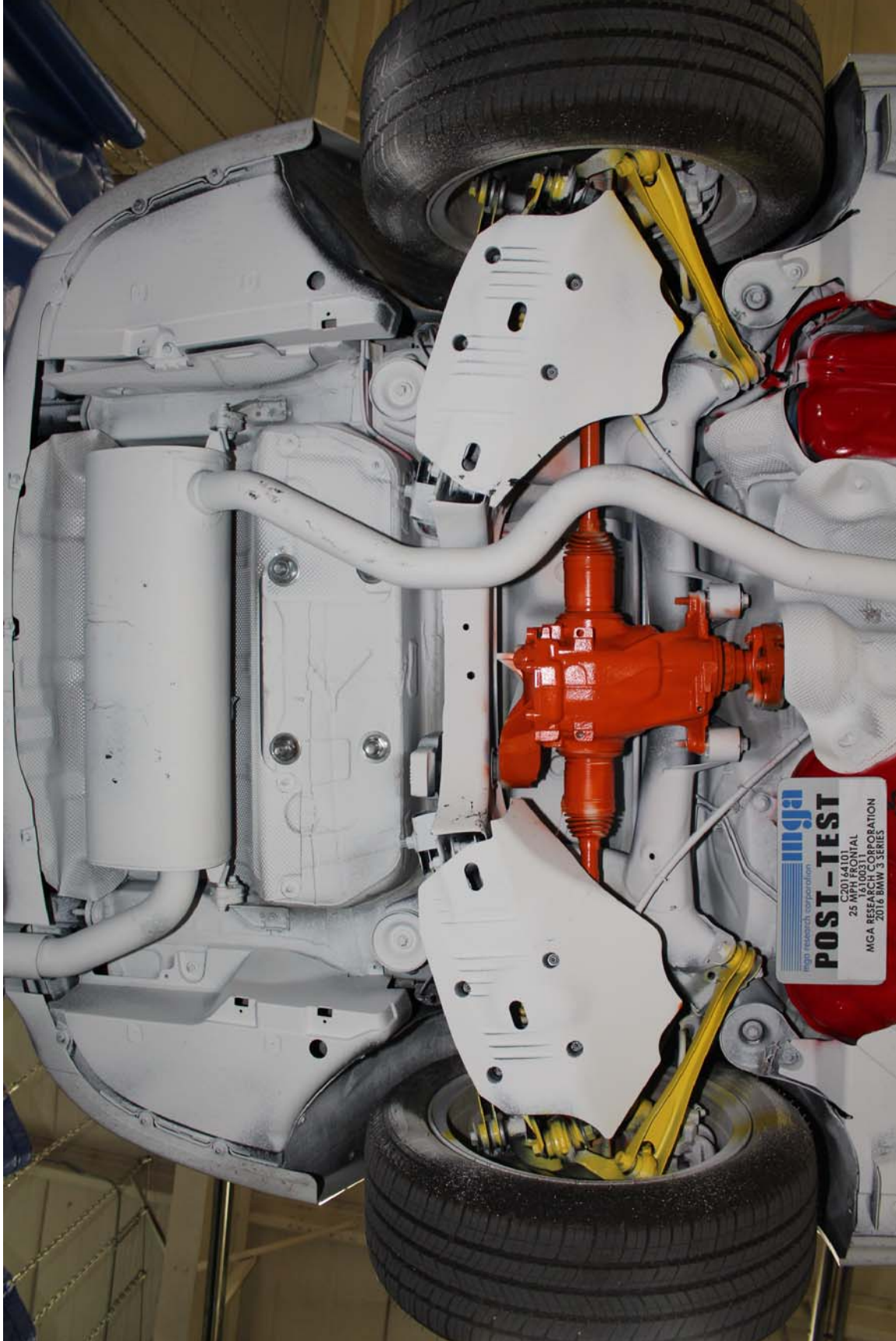


Photo No. 32 - Post-Test Rear Underbody View



Photo No. 33 - Pre-Test Driver Dummy Front View (head position)



Photo No. 34 - Post-Test Driver Dummy Front View (head position)





Photo No. 35 - Pre-Test Driver Dummy Position Left Side View



Photo No. 36 - Post-Test Driver Dummy Position Left Side View



Photo No. 37 - Pre-Test Driver Dummy Position Left Side View (door open)





Photo No. 38 - Post-Test Driver Dummy Position Left Side View (door open)



Photo No. 39 - Pre-Test Driver Dummy Seat Position



Photo No. 40 - Post-Test Driver Dummy Seat Position





Photo No. 41 - Pre-Test Driver Dummy Feet Position



Photo No. 42 - Post-Test Driver Dummy Feet Position



Photo No. 43 - Pre-Test Driver Side Knee Bolster View





Photo No. 44 - Post-Test Driver Side Knee Bolster View





Photo No. 45 - Post-Test Driver Dummy Airbag Contact



Photo No. 46 - Post-Test Driver Dummy Knee Contact



Photo No. 47 - Pre-Test Passenger Dummy Front View (head position)





Photo No. 48 - Post-Test Passenger Dummy Front View (head position)



Photo No. 49 - Pre-Test Passenger Dummy Position Right Side View



Photo No. 50 - Post-Test Passenger Dummy Position Right Side View





Photo No. 51 - Pre-Test Passenger Dummy Position Right Side View (door open)





Photo No. 52 - Post-Test Passenger Dummy Position Right Side View (door open)



Photo No. 53 - Pre-Test Passenger Dummy Seat Position



Photo No. 54 - Post-Test Passenger Dummy Seat Position





Photo No. 55 - Pre-Test Passenger Dummy Feet Position



Photo No. 56 - Post-Test Passenger Dummy Feet Position







Photo No. 58 - Post-Test Passenger Side Knee Bolster View





Photo No. 59 - Post-Test Passenger Dummy Airbag Contact



Photo No. 60 - Post-Test Passenger Dummy Knee Contact





Photo No. 61 - Rollover 90 Degrees



Photo No. 62 - Rollover 180 Degrees





Photo No. 63 - Rollover 270 Degrees



Photo No. 64 - Rollover 360 Degrees



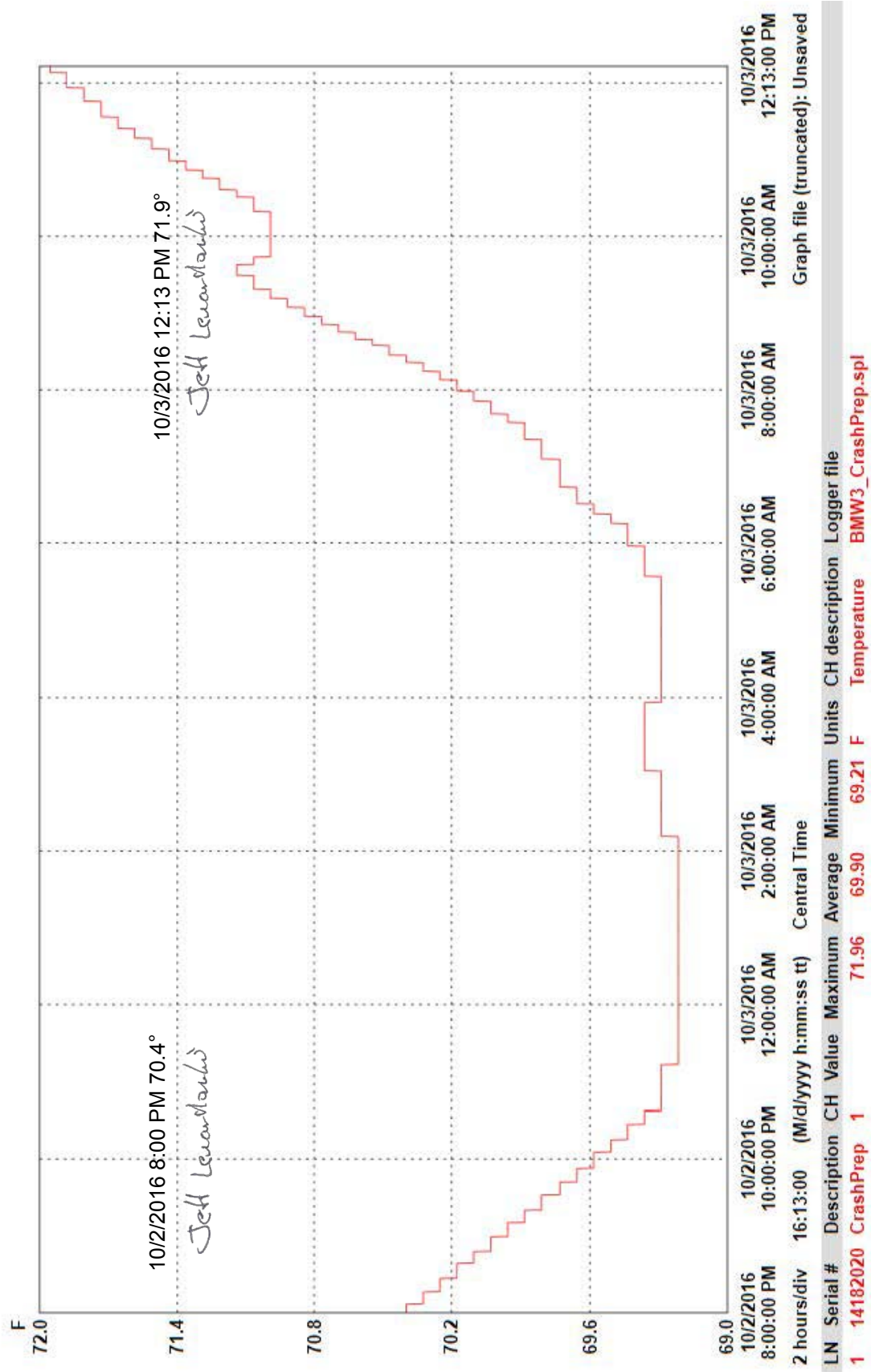


Photo No. 65 - Temperature Plot



## APPENDIX D

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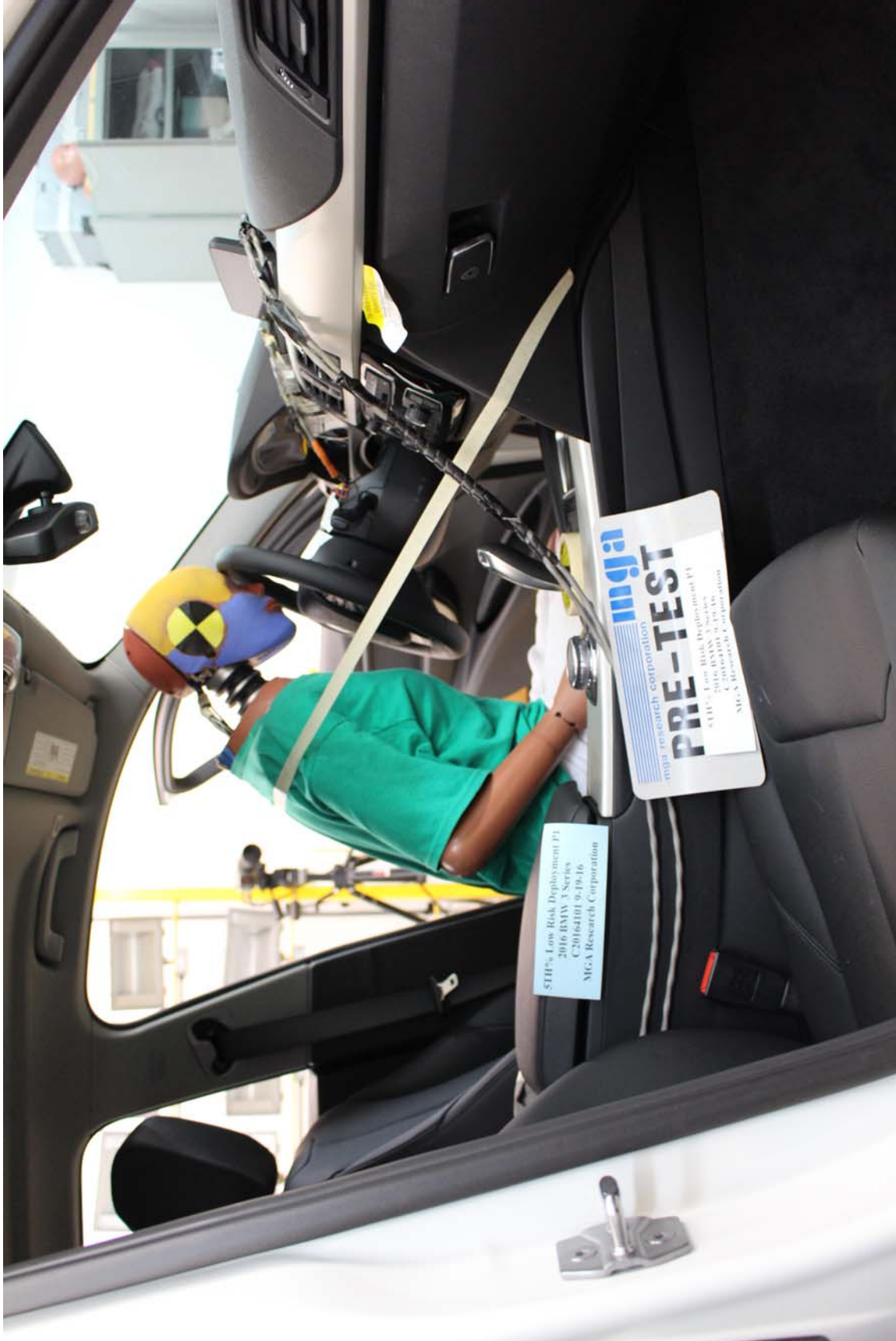


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Photo No. 14 - Post-Test 3YO P1 Passenger Dummy Left Side View



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Photo No. 35 - Post-Test 6YO P2 Passenger Dummy Left Side View



Photo No. 36 - Pre-Test 6YO P2 Passenger Dummy Right Side View





Photo No. 37 - Post-Test 6YO P2 Passenger Dummy Right Side View

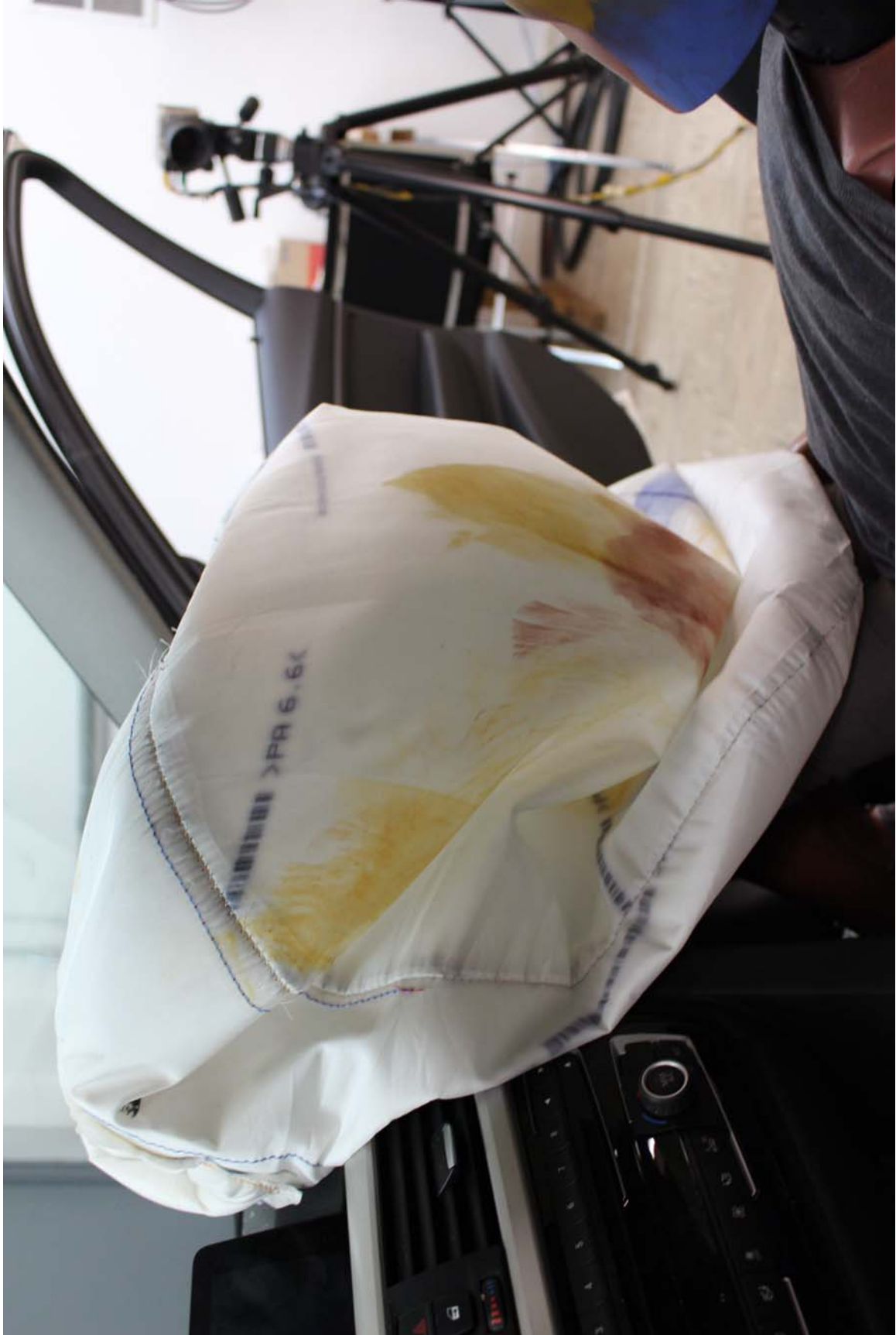


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## APPENDIX E

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Angel Guard Ride Car Bed Belted, Forward Seat Track



Angel Guard Ride Car Bed Belted, Middle Seat Track



Angel Guard Ride Car Bed Belted, Rearward Seat Track



Unbelted 5th Percentile Female Human Reactivation, Forward Seat Track





Cosco Arriva WBBase, Belted, Rear Facing, Forward Seat Track



Cosco Arriva WBBase, Belted, Rear Facing, Middle Seat Track



Cosco Arriva WBBase, Belted, Rear Facing, Rearward Seat Track



Cosco Arriva WBBase, Unbelted, Rear Facing, Middle Seat Track





Cosco Arriva WBase, Unbelted, Rear Facing, Rearward Seat Track



Cosco Arriva WBase, Unbelted, Forward Facing, Forward Seat Track



Cosco Arriva WBase, Unbelted, Forward Facing, Middle Seat Track



Cosco Arriva WBase, Unbelted, Forward Facing, Rearward Seat Track





Cosco Arriva WOut Base, Belted, Rear Facing, Forward Seat Track



Cosco Arriva WOut Base, Belted, Rear Facing, Middle Seat Track



Cosco Arriva WOut Base, Belted, Rear Facing, Rearward Seat Track



Cosco Arriva WOut Base, Unbelted, Rear Facing, Forward Seat Track





Cosco Arriva WOut Base, Unbelted, Rear Facing, Middle Seat Track



Cosco Arriva WOut Base, Unbelted, Rear Facing, Rearward Seat Track



Cosco Arriva WOut Base, Unbelted, Forward Facing, Middle Seat Track



Cosco Arriva WOut Base, Unbelted, Forward Facing, Rearward Seat Track



Cosco Arriva WOut Base, Unbelted, Forward Facing, Rearward Seat Track



Unbelted 5th Percentile Female Human Reactivation, Middle Seat Track





Graco Snuggly WBase, Belted, Rear Facing, Forward Seat Track



Graco Snuggly WBase, Belted, Rear Facing, Middle Seat Track



Graco Snuggly WBase, Belted, Rear Facing, Rearward Seat Track



Graco Snuggly WBase, Unbelted, Rear Facing, Forward Seat Track





Graco Snuggly WBase, Unbelted, Rear Facing, Middle Seat Track



Graco Snuggly WBase, Unbelted, Rear Facing, Rearward Seat Track



Graco Snuggly WBase, Unbelted, Forward Facing, Forward Seat Track



Graco Snuggly WBase, Unbelted, Forward Facing, Middle Seat Track





Graco Snugride WBase, Unbelted, Forward Facing, Rearward Seat Track



Graco Snugride WOut Base, Belted, Rear Facing, Forward Seat Track



Graco Snugride WOut Base, Belted, Rear Facing, Middle Seat Track



Graco Snugride WOut Base, Belted, Rear Facing, Rearward Seat Track





Graco Snugride WOut Base, Unbelted, Rear Facing, Forward Seat Track



Graco Snugride WOut Base, Unbelted, Rear Facing, Middle Seat Track



Graco Snugride WOut Base, Unbelted, Rear Facing, Rearward Seat Track



Graco Snugride WOut Base, Unbelted, Forward Facing, Forward Seat Track



Graco Snuggly W/Out Base, Unbelted, Forward Facing, Middle Seat Track



Graco Snuggly W/Out Base, Unbelted, Forward Facing, Rearward Seat Track



Unbelted 5th Percentile Female Human Reactivation, Middle Seat Track





Peg Perego Viaggio WBase, Belted, Rear Facing, Forward Seat Track



Peg Perego Viaggio WBase, Belted, Rear Facing, Middle Seat Track



Peg Perego Viaggio WBase, Belted, Rear Facing, Rearward Seat Track



Peg Perego Viaggio WBase, Unbelted, Rear Facing, Forward Seat Track





Peg Perego Viaggio WBase, Unbelted, Rear Facing, Middle Seat Track



Peg Perego Viaggio WBase, Unbelted, Rear Facing, Rearward Seat Track



Peg Perego Viaggio WBase, Unbelted, Forward Facing, Forward Seat Track



Peg Perego Viaggio WBase, Unbelted, Forward Facing, Middle Seat Track





Peg Perego Viaggio WBase, Unbelted, Forward Facing, Rearward Seat Track



Peg Perego Viaggio WOut Base, Belted, Rear Facing, Forward Seat Track



Peg Perego Viaggio WOut Base, Belted, Rear Facing, Middle Seat Track



Peg Perego Viaggio WOut Base, Belted, Rear Facing, Rearward Seat Track





Peg Perego Viaggio WOut Base, Unbelted, Rear Facing, Forward Seat Track



Peg Perego Viaggio WOut Base, Unbelted, Rear Facing, Middle Seat Track



Peg Perego Viaggio WOut Base, Unbelted, Rear Facing, Rearward Seat Track



Peg Perego Viaggio WOut Base, Unbelted, Forward Facing, Forward Seat Track



Peg Perego Viaggio WOut Base, Unbelted, Forward Facing, Middle Seat Track



Peg Perego Viaggio WOut Base, Unbelted, Forward Facing, Rearward Seat Track



Unbelted 5th Percentile Female Human Reactivation, Rearward Seat Track





Britax Roundabout Forward Facing, Belted, Forward Seat Track



Britax Roundabout Forward Facing, Belted, Middle Seat Track



Britax Roundabout Forward Facing, Belted, Rearward Seat Track



Britax Roundabout Forward Facing, Unbelted, Forward Seat Track





Britax Roundabout Forward Facing, Unbelted, Middle Seat Track



Britax Roundabout Forward Facing, Unbelted, Rearward Seat Track



Britax Roundabout Rear Facing, Belted, Forward Seat Track



Britax Roundabout Rear Facing, Belted, Middle Seat Track



Britax Roundabout Rear Facing, Belted, Rearward Seat Track



Britax Roundabout Rear Facing, Unbelted, Forward Seat Track



Britax Roundabout Rear Facing, Unbelted, Middle Seat Track



Britax Roundabout Rear Facing, Unbelted, Rearward Seat Track





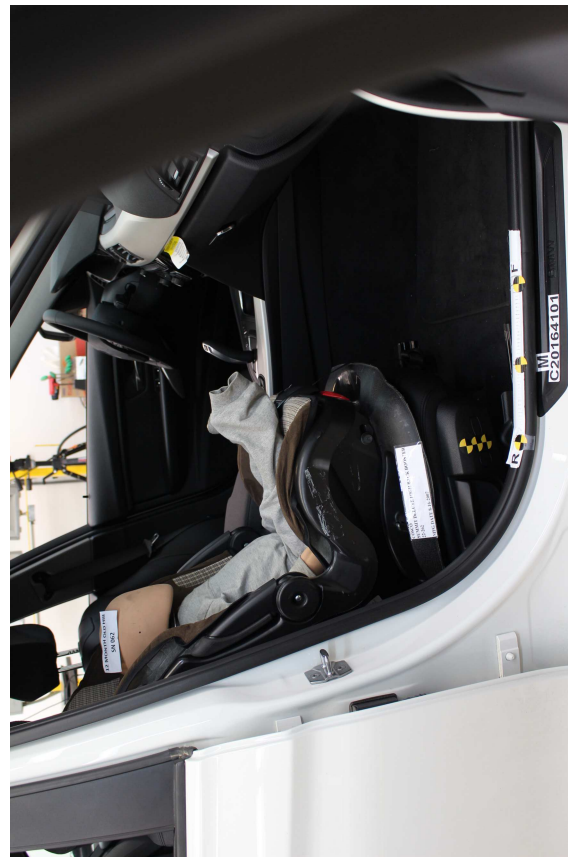
Unbelted 5th Percentile Female Human Reactivation, Middle Seat Track



Cosco Summit Deluxe Forward Facing, Belted, Forward Seat Track



Cosco Summit Deluxe Forward Facing, Belted, Middle Seat Track



Cosco Summit Deluxe Forward Facing, Belted, Rearward Seat Track



Cosco Summit Deluxe Forward Facing, Unbelted, Forward Seat Track





Cosco Summit Deluxe Forward Facing, Unbelted, Middle Seat Track



Cosco Summit Deluxe Forward Facing, Unbelted, Rearward Seat Track



Cosco Summit Deluxe Rear Facing, Unbelted, Forward Seat Track



Cosco Summit Deluxe Rear Facing, Unbelted, Middle Seat Track





Cosco Summit Deluxe Rear Facing, Unbelted, Rearward Seat Track



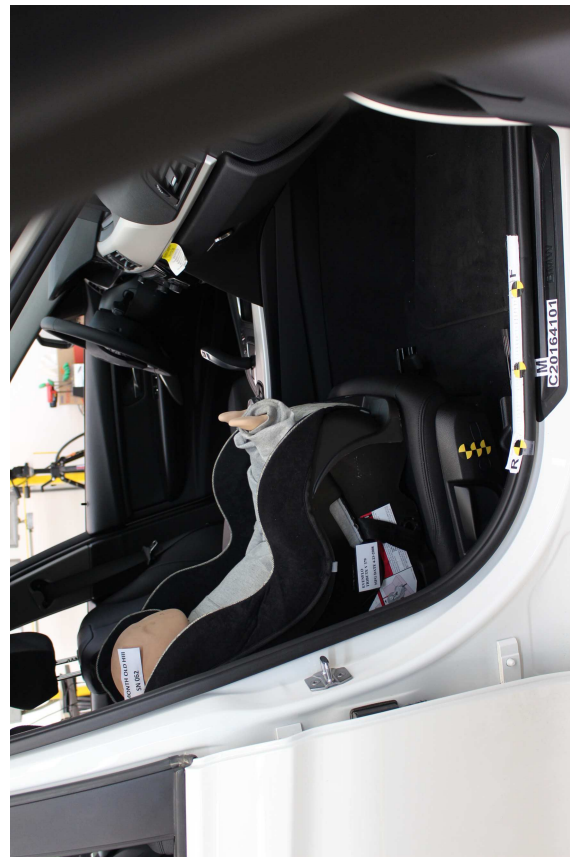
Unbelted 5th Percentile Female Human Reactivation, Forward Seat Track



Evenflo Tribute Forward Facing, Belted, Forward Seat Track



Evenflo Tribute Forward Facing, Belted, Middle Seat Track



Evenflo Tribute Forward Facing, Belted, Rearward Seat Track



Evenflo Tribute Forward Facing, Unbelted, Forward Seat Track





Evenflo Tribute Forward Facing, Unbelted, Middle Seat Track



Evenflo Tribute Forward Facing, Unbelted, Rearward Seat Track



Evenflo Tribute Rear Facing, Belted, Forward Seat Track



Evenflo Tribute Rear Facing, Belted, Middle Seat Track



Evenflo Tribute Rear Facing, Belted, Rearward Seat Track



Evenflo Tribute Rear Facing, Unbelted, Forward Seat Track



Evenflo Tribute Rear Facing, Unbelted, Middle Seat Track



Evenflo Tribute Rear Facing, Unbelted, Rearward Seat Track





Unbelted 5th Percentile Female Human Reactivation, Forward Seat Track

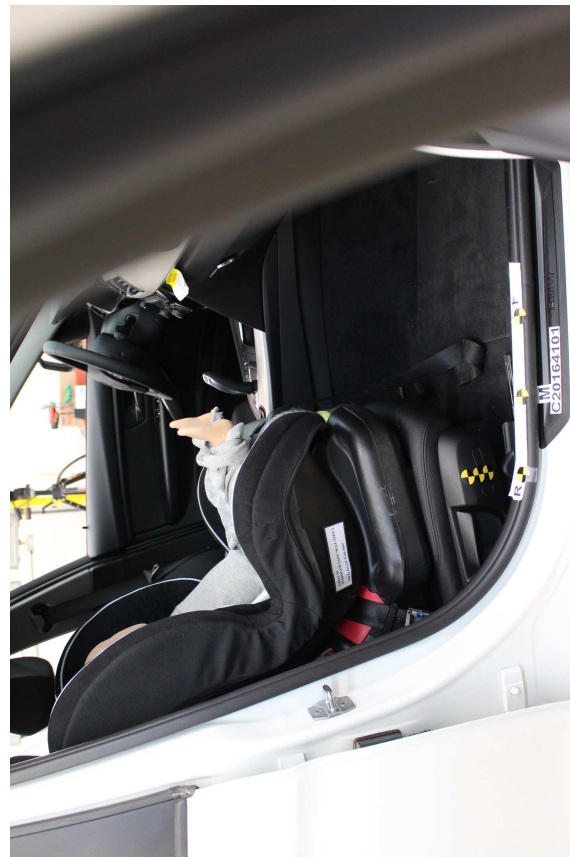




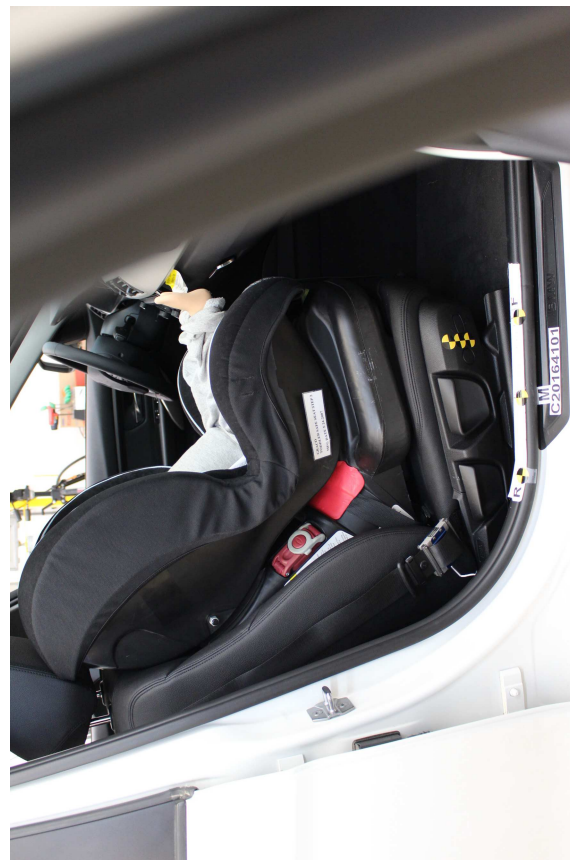
Graco Toddler Safeseat Step 2 Forward Facing, Belted, Forward Seat Track



Graco Toddler Safeseat Step 2 Forward Facing, Belted, Middle Seat Track



Graco Toddler Safeseat Step 2 Forward Facing, Belted, Rearward Seat Track



Graco Toddler Safeseat Step 2 Forward Facing, Unbelted, Forward Seat Track



Graco Toddler Safeseat Step 2 Forward Facing, Unbelted, Middle Seat Track



Graco Toddler Safeseat Step 2 Forward Facing, Unbelted, Rearward Seat Track



Graco Toddler Safeseat Step 2 Rear Facing, Unbelted, Forward Seat Track



Graco Toddler Safeseat Step 2 Rear Facing, Unbelted, Middle Seat Track





Graco Toddler Safeseat Step 2 Rear Facing, Unbelted, Rearward Seat Track



Unbelted 5th Percentile Female Human Reactivation, Rearward Seat Track

## APPENDIX F

### INSTRUMENTATION CALIBRATION

#### INSTRUMENTS FOR DRIVER DUMMY NO.: 124

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P91705	Endevco	8/1/2016
Head Y	P91707	Endevco	8/1/2016
Head Z	P91711	Endevco	8/1/2016
Neck Load Cell	N1175	Denton	6/15/2016
Chest X	P91766	Endevco	8/1/2016
Chest Y	P91773	Endevco	8/1/2016
Chest Z	P91774	Endevco	8/1/2016
Chest Displacement	124	Servo	8/1/2016
Left Femur Load Cell	F959	GSE	8/1/2016
Right Femur Load Cell	F950	GSE	8/1/2016

#### INSTRUMENTS FOR PASSENGER DUMMY NO.: 125

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P79891	Endevco	9/15/2016
Head Y	P79892	Endevco	9/15/2016
Head Z	P79893	Endevco	9/15/2016
Neck Load Cell	N9753	Denton	7/19/2016
Chest X	P79798	Endevco	9/15/2016
Chest Y	P80124	Endevco	9/15/2016
Chest Z	P80125	Endevco	9/15/2016
Chest Displacement	125	Servo	9/20/2016
Left Femur Load Cell	F8154FZ	Denton	8/12/2016
Right Femur Load Cell	F8153FZ	Denton	8/12/2016

**INSTRUMENTS FOR LOW RISK 5<sup>TH</sup> FEMALE DUMMY NO.: 125 (P1 & P2)**

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P79443	Endevco	5/31/2016
Head Y	P79596	Endevco	5/31/2016
Head Z	P80108	Endevco	5/31/2016
Neck Load Cell	N9753	Denton	7/19/2016
Chest X	P91784	Endevco	3/23/2016
Chest Y	P91787	Endevco	3/23/2016
Chest Z	P91783	Endevco	3/23/2016
Chest Displacement	125	Servo	4/20/2016
Left Femur Load Cell	F8154FZ	Denton	8/12/2016
Right Femur Load Cell	F8153FZ	Denton	8/12/2016

**INSTRUMENTS FOR LOW RISK 3 YEAR OLD DUMMY NO.: 031 (P1 & P2)**

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P79409	Endevco	4/4/16
Head Y	P79414	Endevco	4/4/16
Head Z	P79422	Endevco	4/4/16
Neck Load Cell	N184	Denton	6/14/16
Chest X	P79639	Endevco	4/4/16
Chest Y	P79640	Endevco	4/4/16
Chest Z	P79641	Endevco	4/4/16
Chest Displacement	031	Servo	4/22/16

**INSTRUMENTS FOR LOW RISK 6 YEAR OLD DUMMY NO.: 155 (P1 & P2)**

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P82641	Endevco	5/4/16
Head Y	P82642	Endevco	5/4/16
Head Z	P82644	Endevco	5/4/16
Neck Load Cell	N1206	Denton	7/19/16
Chest X	P82645	Endevco	5/4/16
Chest Y	P82648	Endevco	5/4/16
Chest Z	P82649	Endevco	5/4/16
Chest Displacement	155	Servo	4/22/16



**VEHICLE INSTRUMENTS**

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	P74298	Endevco	9/28/2016
Right Rear Seat Crossmember X	P87519	Endevco	7/18/2016
Top of Engine X	P75542	Endevco	9/28/2016
Bottom of Engine X	P90601	Endevco	8/22/2016
Left Brake Caliper X	P88742	Endevco	9/28/2016
Right Brake Caliper X	P88736	Endevco	9/28/2016
Instrument Panel X	P90679	Endevco	9/28/2016
Trunk Z	P88747	Endevco	9/28/2016